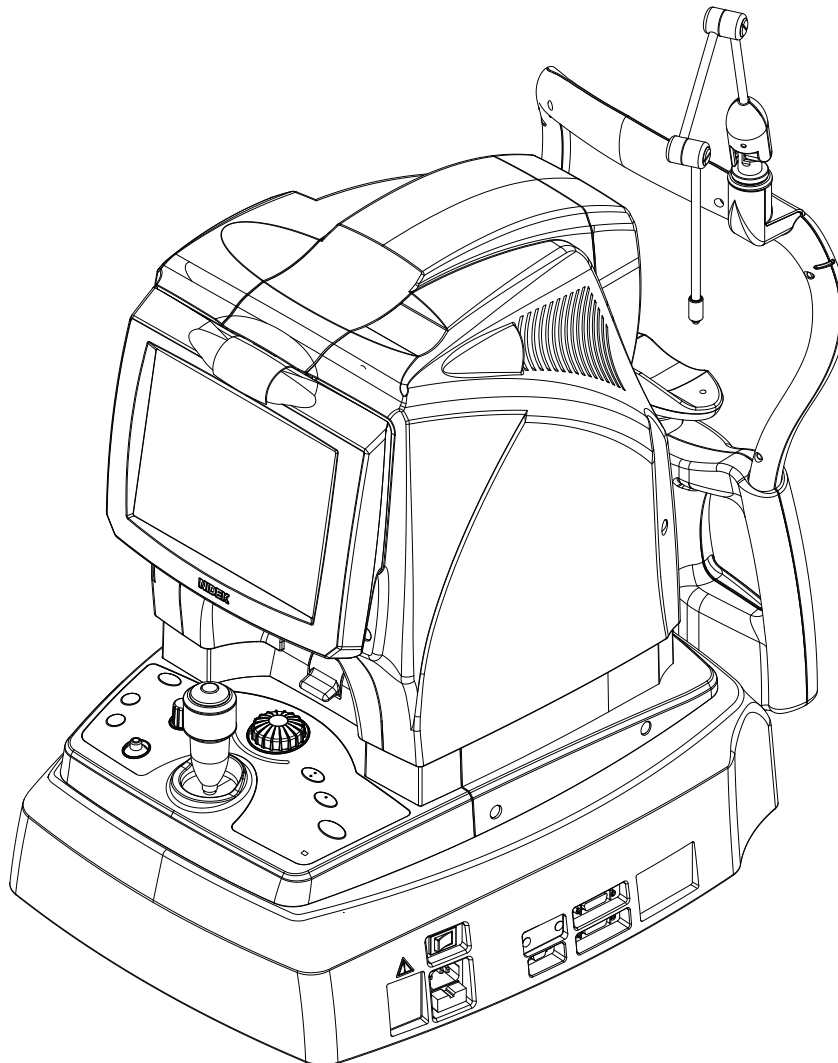


NIDEK

OPTICAL COHERENCE TOMOGRAPHY

Model **RS-3000**

SERVICE MANUAL





NIDEK CO., LTD.

NIDEK CO., LTD.
(Manufacturer)

NIDEK CO., LTD
(Tokyo Office)

NIDEK INCORPORATED
(United States Agent)

NIDEK SOCIETE ANONYME
(EU Authorized Representative)

: 34-14, Maehama, Hiroishi-cho, Gamagori, Aichi 443-0038, Japan
Telephone: 81-533- 67-6611
Facsimile: 81-533-67-6610
: 3F Sumitomo Fudosan Hongo Bldg., 3-22-5, Hongo,
Bunkyo-Ku, Tokyo 113-0033, Japan
Telephone: 81-3-5844-2641
Facsimile: 81-3-5844-2642
: 47651 Westinghouse Drive, Fremont, California 94539, U. S. A.
Telephone: 1-510-226-5700
Facsimile: 1-510-226-5750
: Europarc 13, rue Auguste Perret, 94042 CRETEIL, France
Telephone: 33-1-49 80 97 97
Facsimile: 33-1-49 80 32 08

Table of Contents

1. INTRODUCTION	1
2. SAFETY PRECAUTIONS	3
3. SPECIFICATIONS	5
4. TROUBLESHOOTING	7
5. SUBTROUBLESHOOTING	9
5 . 1 Pilot Lamp of Isolation Transformer does not Light Up	9
5 . 2 Main Body does not Start Properly	10
5 . 2 . 1 Pilot lamp of main body does not light up	11
5 . 2 . 2 Startup screen does not appear on LCD monitor of main body	12
5 . 2 . 3 Voltage between each TP and GND of power filter board (10701-BA06) is abnormal	13
5 . 2 . 4 Error message appears on LCD monitor of main body	14
5 . 2 . 4 . 1 ERROR: 001 (EEPROM data)	14
5 . 2 . 4 . 2 ERROR: 002 (Connection with PC software)	14
5 . 2 . 4 . 3 ERROR: 003 (Optical axis adjustment)	15
5 . 2 . 4 . 4 ERROR: 004 (Body cover open)	15
5 . 2 . 4 . 5 ERROR: 005 (Body cover DIP switch)	16
5 . 2 . 4 . 6 ERROR: 006 (Base cover)	16
5 . 2 . 4 . 7 ERROR: 007 (Base DIP switch)	16
5 . 2 . 4 . 8 ERROR: 008 (LCD Backlight)	16
5 . 2 . 4 . 9 ERROR: 011 (Spectrometer motor overrun)	17
5 . 2 . 4 . 10 ERROR: 012 (Spectrometer motor stop)	17
5 . 2 . 4 . 11 ERROR: 013 (OPL motor overrun)	17
5 . 2 . 4 . 12 ERROR: 014 (OPL motor stop)	17
5 . 2 . 4 . 13 ERROR: 015 (Focus motor overrun)	17
5 . 2 . 4 . 14 ERROR: 016 (Focus motor stop)	17
5 . 2 . 4 . 15 ERROR: 017 (Chin-rest motor)	17
5 . 2 . 4 . 16 ERROR: 018 (Up/Down motor)	18
5 . 2 . 4 . 17 ERROR: 021 (OCT X galvano driver)	19
5 . 2 . 4 . 18 ERROR: 022 (OCT Y galvano driver)	19
5 . 2 . 4 . 19 ERROR: 023 (OCT galvano mirror)	19
5 . 2 . 4 . 20 ERROR: 024 (OCT SLD)	19
5 . 2 . 4 . 21 ERROR: 025 (OCT shutter)	19
5 . 2 . 4 . 22 ERROR: 026 (OCT initialization)	19
5 . 2 . 4 . 23 ERROR: 027 (SLD power over)	19
5 . 2 . 4 . 24 ERROR: 028 (Timing of SLD and LD)	19
5 . 2 . 4 . 25 ERROR: 029 (OCT galvano synchronization)	20

5 . 2 . 4 . 26	ERROR: 031 (SLO galvano driver)	21
5 . 2 . 4 . 27	ERROR: 032 (SLO galvano mirror)	21
5 . 2 . 4 . 28	ERROR: 033 (SLO polygon mirror)	21
5 . 2 . 4 . 29	ERROR: 034 (SLO polygon sensor)	21
5 . 2 . 4 . 30	ERROR: 035 (SLO LD)	21
5 . 2 . 4 . 31	ERROR: 036 (FIX LD)	21
5 . 2 . 4 . 32	ERROR: 037 (SLO shutter)	21
5 . 2 . 5	Initialization is not completed	21
5 . 3	Anterior Eye is not Displayed	22
5 . 3 . 1	Anterior eye illumination is not lit	22
5 . 4	PC does not Start Properly	23
5 . 4 . 1	PC cannot be turned on	24
5 . 4 . 2	OS is not activated properly	25
5 . 4 . 3	RS-3000 Capture is not activated	25
5 . 4 . 4	RS3K Capture error appears on LCD monitor of PC	26
5 . 4 . 4 . 1	ERROR: 1001 (Connection with DB software)	26
5 . 4 . 4 . 2	ERROR: 1002 (SLO capture board)	26
5 . 4 . 4 . 3	ERROR: 1003 (OCT capture board)	27
5 . 4 . 4 . 4	ERROR: 1004 (Limit over capture board)	27
5 . 4 . 4 . 5	ERROR: 1011 (System information)	27
5 . 4 . 4 . 6	ERROR: 1012 (Trigger cable [input])	28
5 . 4 . 4 . 7	ERROR: 1013 (Trigger cable [output])	28
5 . 4 . 4 . 8	ERROR: 1014 (Connection with CCD camera)	29
5 . 4 . 4 . 9	ERROR: 1015 (OCT calibration file)	29
5 . 5	Image Capturing Unit does not Move Smoothly along Base Unit	30
5 . 6	Turning Joystick does not Move Image Capturing Unit Up or Down.	31
5 . 7	Chinrest does not Move	33
5 . 8	External Fixation Target does not Light Up.	34
5 . 9	Internal Fixation Target does not Light Up	34
5 . 10	Hand Light does not Go On	35
5 . 11	Images cannot be Captured	36
5 . 11 . 1	PC and main body cannot be synchronized.	36
5 . 11 . 2	Operation panel is not operational	37
5 . 11 . 2 . 1	Function toggle switch and control knob are not operational.	37
5 . 11 . 2 . 2	Operation panel other than function toggle switch and control knob is not operational	38
5 . 11 . 3	Image capturing cannot be performed properly	38
5 . 12	Printout cannot be Performed Properly.	39
5 . 13	Motorized Optical Table does not Move Up or Down	40

6. REMOVAL PROCEDURE 41

6 . 1	Removing Main Body Covers	41
6 . 1 . 1	Objective lens cover ASSY (10701-2200)	41
6 . 1 . 2	Rear cover ASSY (10701-2300).	41
6 . 1 . 3	Lid (10701-M462).	42

6 . 1 . 4	Chinrest ASSY front cover (10701-M502)	43
6 . 1 . 5	Front cover (10701-M701)	44
6 . 1 . 6	Top cover (10701-M702)	44
6 . 1 . 7	Left cover (10701-M704)	45
6 . 1 . 8	Right cover (10701-M705)	45
6 . 1 . 9	Body front cover (10701-M722)	46
6 . 1 . 10	Brake cover (10701-M723)	47
6 . 1 . 11	Removing board covers	49
6 . 1 . 11. 1	Board cover (10701-M221)	49
6 . 1 . 11. 2	Board cover (10701-M222)	49
6 . 2	Removing Isolation Transformer Cover	50
6 . 2 . 1	Cover (10701-M782)	50
6 . 2 . 2	Power cord guard 1 (10701-M783)	50
6 . 3	Removing PC Covers	51

7. REPLACEMENT PROCEDURE53

7 . 1	Main Body	53
7 . 1 . 1	ASSYs	53
7 . 1 . 1 . 1	Main body	53
7 . 1 . 1 . 2	Operation panel ASSY (10701-1220)	54
7 . 1 . 1 . 3	LCD ASSY (10701-1300)	55
7 . 1 . 1 . 4	Chinrest ASSY (10701-1500)	55
7 . 1 . 1 . 5	External fixation target ASSY (10701-1520)	56
7 . 1 . 1 . 6	Lens cap ASSY (10701-2400)	56
7 . 1 . 1 . 7	Joystick ASSY (30601-2600)	57
7 . 1 . 2	Boards	58
7 . 1 . 2 . 1	Main board (10701-BA01)	58
7 . 1 . 2 . 2	SW board (10701-BA03)	59
7 . 1 . 2 . 3	UDM DRV board (10701-BA04)	60
7 . 1 . 2 . 4	Power filter board (10701-BA06)	60
7 . 1 . 2 . 5	Hand light board (10701-BA23)	61
7 . 1 . 2 . 6	UD sensor board (10701-BA24)	61
7 . 1 . 3	Electrical components	62
7 . 1 . 3 . 1	L. body fan cable (10701-EA55)	62
7 . 1 . 3 . 2	M. body fan cable (10701-EA65)	62
7 . 1 . 3 . 3	R. body fan cable (10701-EA66)	62
7 . 1 . 3 . 4	Rotary encoder	63
7 . 1 . 3 . 5	Fuses of main body	65
7 . 1 . 4	Other parts	66
7 . 1 . 4 . 1	Lens cap (15401-M811)	66
7 . 1 . 4 . 2	Coil cord (15401-M814)	66
7 . 1 . 4 . 3	Sliding plate (32105-M102)	67
7 . 2	Isolation Transformer	68
7 . 2 . 1	Indicator cable (10701-EA71)	68
7 . 2 . 2	Fuses of isolation transformer	69

7 . 3	PC	70
7 . 3 . 1	PC ASSY	70
7 . 3 . 2	Capture board (10701-BA20)	71
7 . 3 . 3	PC monitor (10701-E013)	73
7 . 3 . 4	Keyboard	73
7 . 3 . 5	Coin-shaped lithium battery (10701-E100)	74
7 . 3 . 6	Memory module (10701-E101)	75
7 . 3 . 7	System disk (10701-E102)	76
7 . 3 . 8	Graphic board (10701-E103)	77
7 . 4	Motorized Optical Table	78
7 . 4 . 1	Fuses of motorized optical table	78

8. ADJUSTMENT79

8 . 1	Mode	79
8 . 1 . 1	Service mode	79
8 . 1 . 1 . 1	Activating service mode	79
8 . 1 . 1 . 2	MAINTENANCE mode	80
8 . 1 . 1 . 3	PROGRAM VERSION	80
8 . 1 . 1 . 4	ERROR HISTORY	81
8 . 1 . 1 . 5	E2PROM	82
8 . 1 . 2	Packing mode	82
8 . 2	Checking Anterior Eye Illumination	83
8 . 3	Setting Boards	83
8 . 3 . 1	Capture board (10701-BA20)	83
8 . 4	Loading OCT Calibration File	84
8 . 5	Upgrading Software Version	85
8 . 5 . 1	Main body software upgrade	85
8 . 6	Checking Error Log	87
8 . 6 . 1	Error log of main body	87
8 . 6 . 2	Error log file of RS-3000 Capture	87
8 . 7	Free Space in Hard Disk Drive	88
8 . 8	PC Settings	88
8 . 8 . 1	BIOS setting	88
8 . 8 . 2	Date and time setting	90
8 . 8 . 3	Time zone setting	91
8 . 9	Motorized Optical Table	92
8 . 9 . 1	Injecting grease	92

9. SUPPLEMENT93

9 . 1	Appearance	93
9 . 1 . 1	System configuration	93
9 . 1 . 2	Main body	94
9 . 1 . 3	Operation panel	95
9 . 1 . 4	Isolation transformer	95
9 . 2	Labels	96
9 . 2 . 1	Transformer box	96

9 . 2 . 2	Main body	98
9 . 2 . 3	Motorized optical table	100
9 . 3	Wiring Diagram	101
9 . 4	Connector Cable	103
9 . 5	Switch Positions on Boards	123
9 . 6	Parameter List	126
9 . 7	Error Code List	130
9 . 7 . 1	Main body	130
9 . 7 . 2	PC	132
9 . 8	Layout Drawing	133
9 . 8 . 1	ASSYs	133
9 . 8 . 2	Boards	133
9 . 8 . 3	Electrical components	134
9 . 9	Jigs	134
9 . 10	Consumable	134
9 . 11	List of Replacement Parts and Required Adjustments	135
9 . 12	Screw List	136

This page is intentionally left blank

1 INTRODUCTION

This Service Manual is for the NIDEK OPTICAL COHERENCE TOMOGRAPHY, RS-3000.
For correct service, thorough understanding of the contents in this manual is required prior to the service.

Refer to the Operator's Manual and Parts List for the RS-3000.

Refer to the Service Manual Annex for important changes.

Descriptions in this manual are subject to change without notice for improvement.





This page is intentionally left blank

2 SAFETY PRECAUTIONS

1 . General precautions

- 1) Servicing must be performed by NIDEK service persons or other qualified personnel.
- 2) In case the system cannot be repaired by the procedures described in this manual, please report the serial number of the system and details of the symptom or symptoms.
- 3) Observe the procedures described in this manual.
- 4) Failure to do so may cause accident or malfunction.
- 5) When performing maintenance work, turn off the power switch and disconnect the power cord from the wall outlet unless the power needs to be on.
- 6) Never wipe the covers using an organic solvent such as paint thinner. Doing so may ruin the surface and impair the appearance of the system.

2 . Maintenance cautions

- 1) In case of the system malfunction, check the symptom and turn off the power switch.
- 2) Do not drop parts or screws inside the system, nor bump it against surrounding objects.
- 3) Prepare storage cases so as not to lose the removed parts or screws.
- 4) Tighten or loosen screws with proper tools.
- 5) After loosening the screws fastened by a threadlocking adhesive, be sure to reapply the threadlocking adhesive to the screws when retightening them.
- 6) After replacing parts, confirm that they are fastened in their original positions securely before turning on the power.
- 7) Should you observe smoke or strange odors being issued from the system, immediately turn off the power switch, disconnect the power cord from the outlet, and investigate the cause.
- 8) If the system is powered in abnormal conditions, fire, electric shock, or total loss of the system may result.
- 9) See Wiring Diagram and Connecting Cable to check cable breaks as described in TROUBLESHOOTING. In addition, check cables for the following:
 - a . Connectors are connected and crimped properly.
 - b . No contact failure occurs after re-connection of connectors.
 - c . Cables are soldered properly.
 - * Do not yank the cables with excessive force. Doing so could cause cable breakage.
 - * Never perform servicing with wet hands. Doing so could cause electric shock or malfunction.
- 10)  The labeled area indicates high voltage. Take proper precautions against electric shock.
- 11) When a cable with any of the following marks is disconnected and reconnected, be sure to confirm that the screws are tightened securely.
 - a . Protective ground 
 - b . Functional ground 
 - c . Equipotential 

3 . Adjustment precautions

- 1) Confirm that the following conditions are met before installation.
 - a . A place which is level and stable without vibration and shock
 - b . No exposure to direct sunlight or ultraviolet rays
 - c . A place with minimal external light source
 - d . No exposure to water
 - e . A place where temperature and humidity meet the specifications for use
- 2) Never use the adjustment jigs for purposes other than those intended.

3 SPECIFICATIONS

1 . Specifications

- | | |
|--|--|
| 1) Measurement principle | SLO image: Confocal laser scanning method (refraction)
OCT image: Spectral OCT (spectral domain OCT)
Anterior eye observation image: CCD |
| 2) Source wavelength | SLO: 785 nm
OCT: 880 nm
Internal fixation target: 635 nm |
| 3) Optical resolution | SLO: 25 μ m (XY direction)
OCT: 20 μ m (XY direction) 7 μ m (Z direction, eye interior) |
| 4) Display resolution | SLO: 7.5 μ m or less (XY direction)
OCT: 3 μ m or less (XY direction) 4 μ m (Z direction, eye interior) |
| 5) Working distance | 35.5 mm (From the objective lens to the pupil) |
| 6) Minimum pupil diameter required | \varnothing 2.5 mm (\varnothing 3 mm or more is recommended for capturing.) |
| 7) Main body LCD monitor | 8.4-inch TFT color LCD |
| 8) Diopter correction range | -15 D to +10 D (VD = 12 mm) |
| 9) Angle of view for capturing | SLO image: 40 \times 30 $^{\circ}$ (20 \times 15 $^{\circ}$ when zoomed)
OCT image: 10 to 30 $^{\circ}$ (changeable in increments of 1 $^{\circ}$) |
| 10) Image capturing unit vertical movement | 32 mm |
| 11) Image capturing unit horizontal movement | forward and backward: 40 mm
right and left: 85 mm |
| 12) Chinrest vertical movement | 62 mm |
| 13) Interface | Main body: USB (only for program upgrade)
PC: USB, Ethernet |

2 . Power specifications

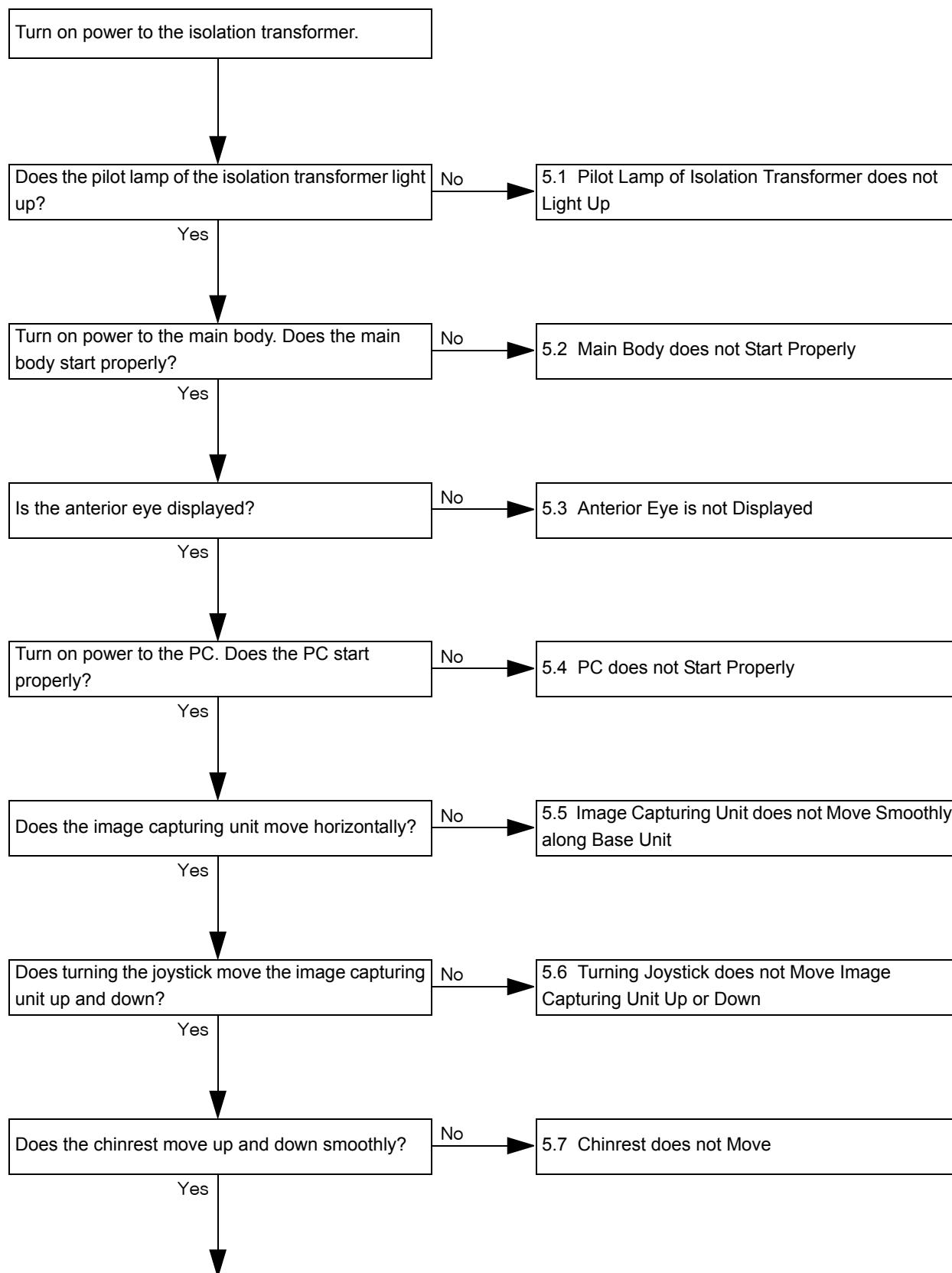
- 1) Power source: AC 120 V (\pm 10%)/AC 230 V (\pm 10%) 50/60 Hz
- 2) Power consumption: Maximum 1000 VA

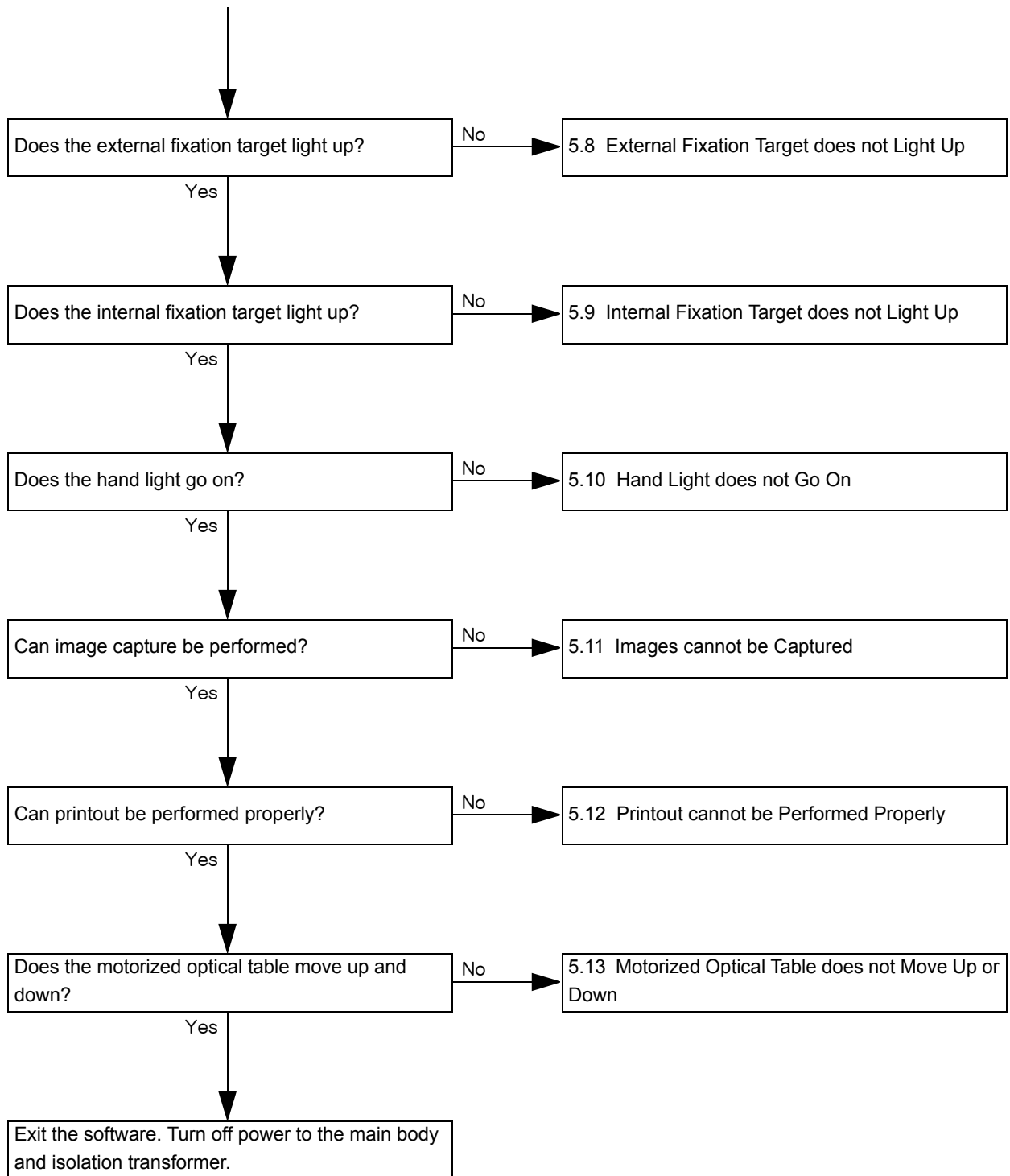
3 . Dimensions and weight

- 1) Main body dimensions: 567 (W) \times 472 (D) \times 600 to 845 (H) mm
- 2) PC dimensions: 452 (W) \times 630 (D) \times 703 (H) mm
- 3) Gross weight: 138 kg
(with the optional rack and motorized optical table installed)

This page is intentionally left blank

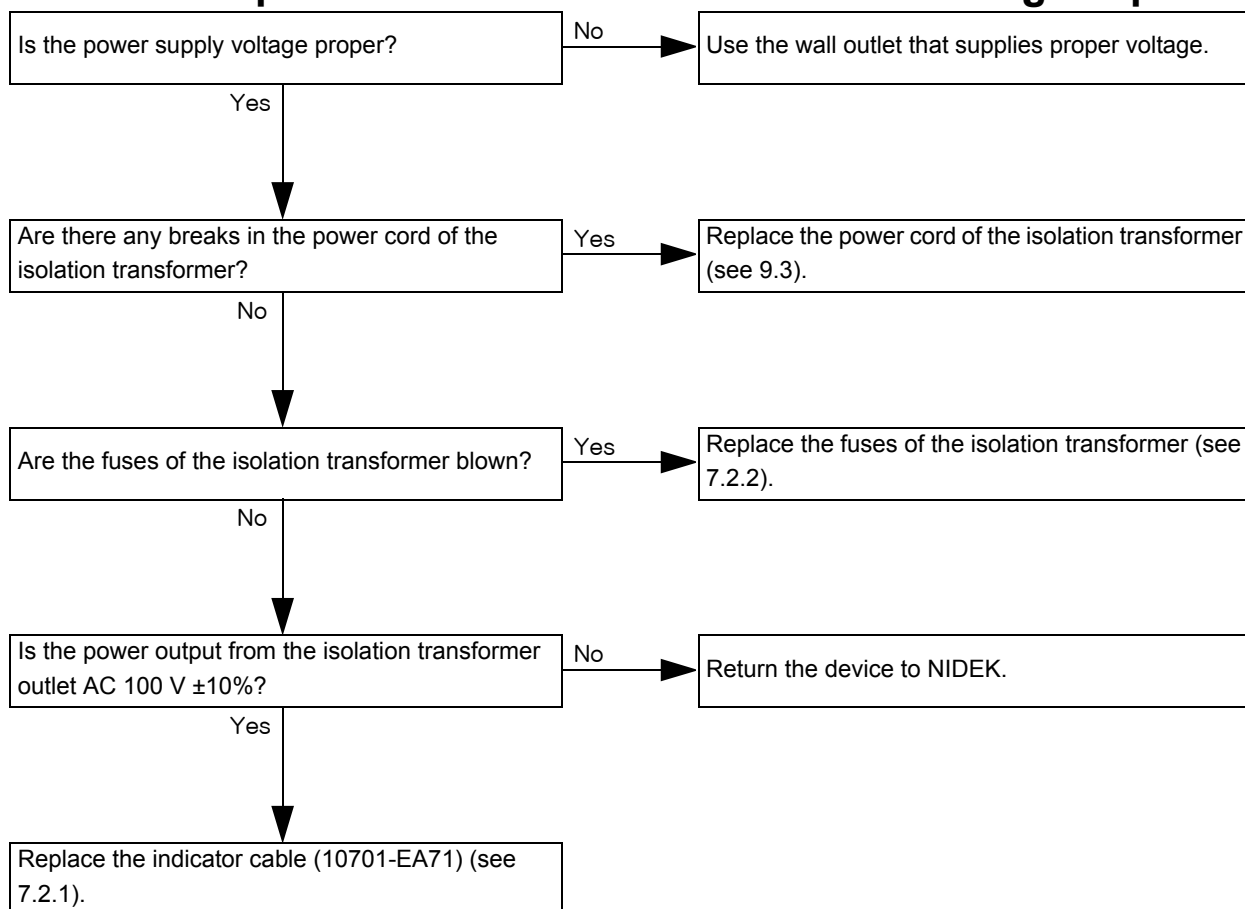
4 TROUBLESHOOTING



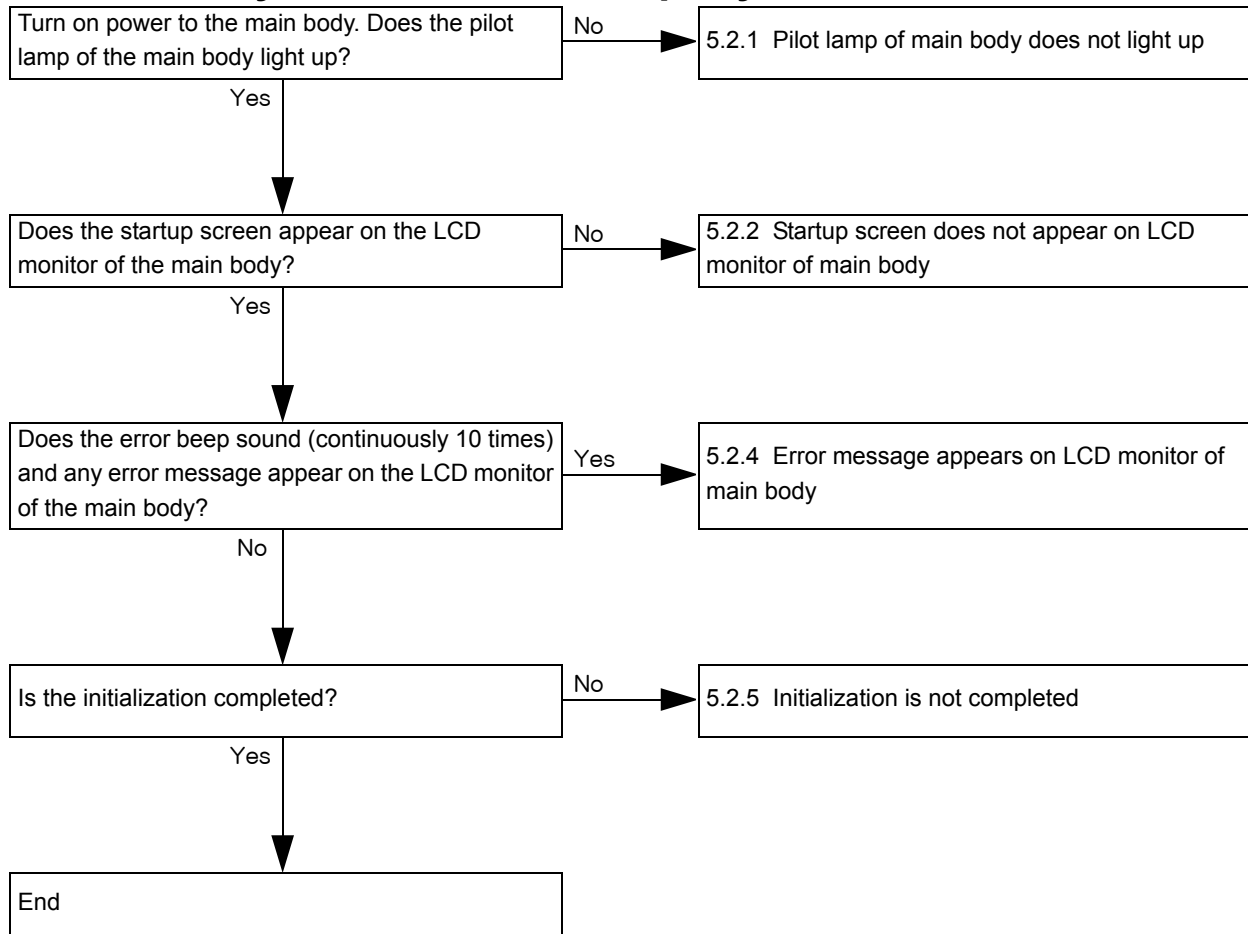


5 SUBTROUBLESHOOTING

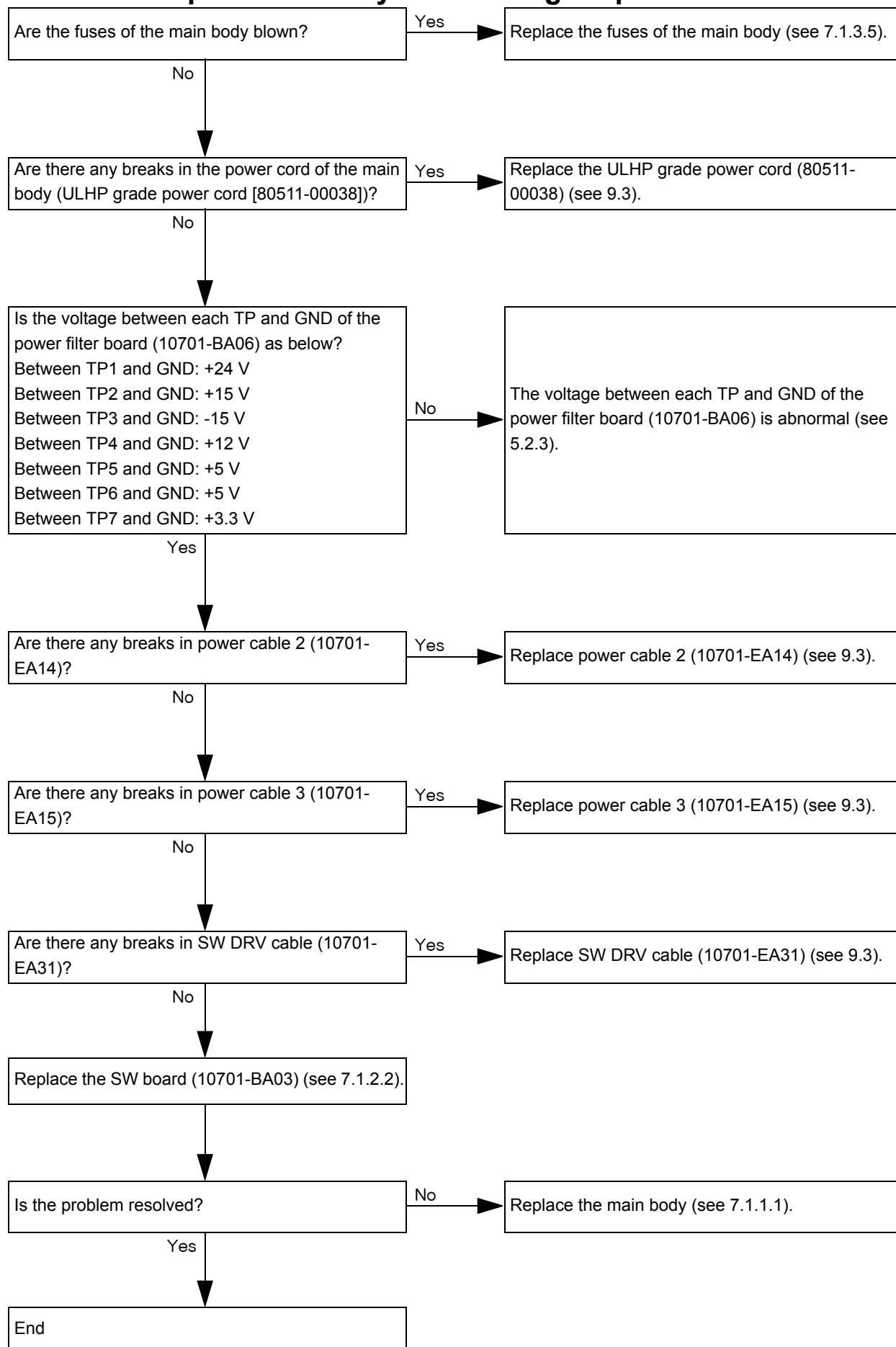
5.1 Pilot Lamp of Isolation Transformer does not Light Up



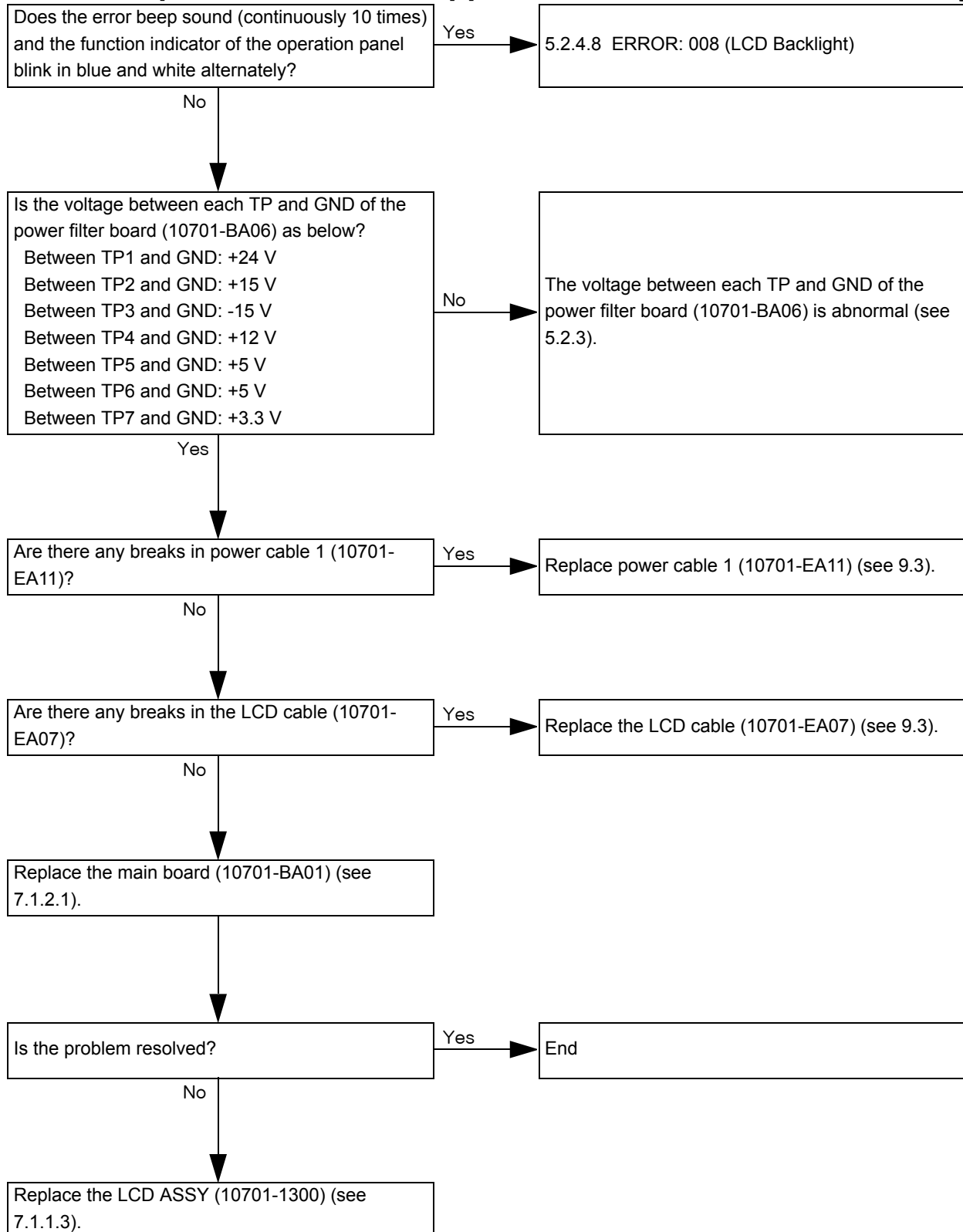
5.2 Main Body does not Start Properly



5.2.1 Pilot lamp of main body does not light up

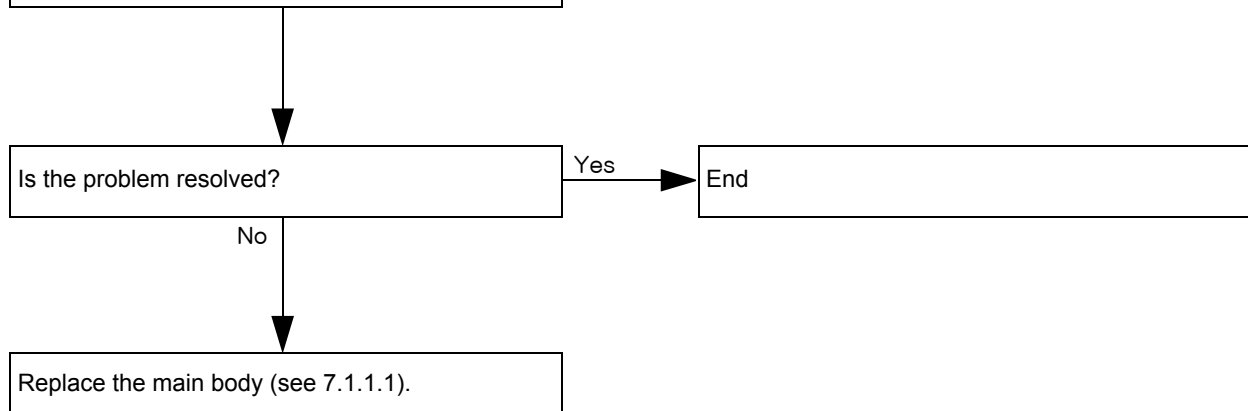


5.2.2 Startup screen does not appear on LCD monitor of main body



5.2.3 Voltage between each TP and GND of power filter board (10701-BA06) is abnormal

Replace the power filter board (10701-BA06) (see 7.1.2.4).

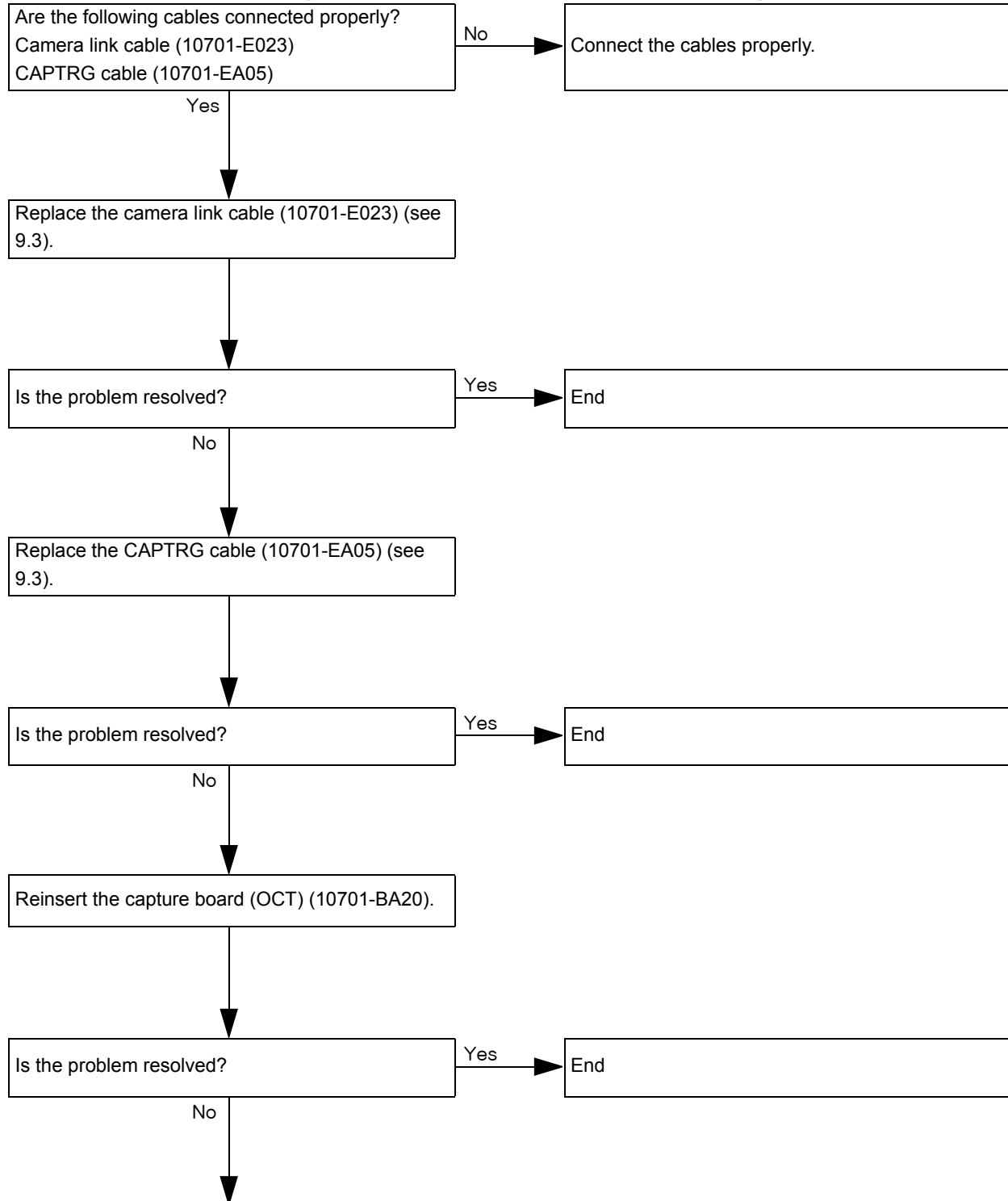


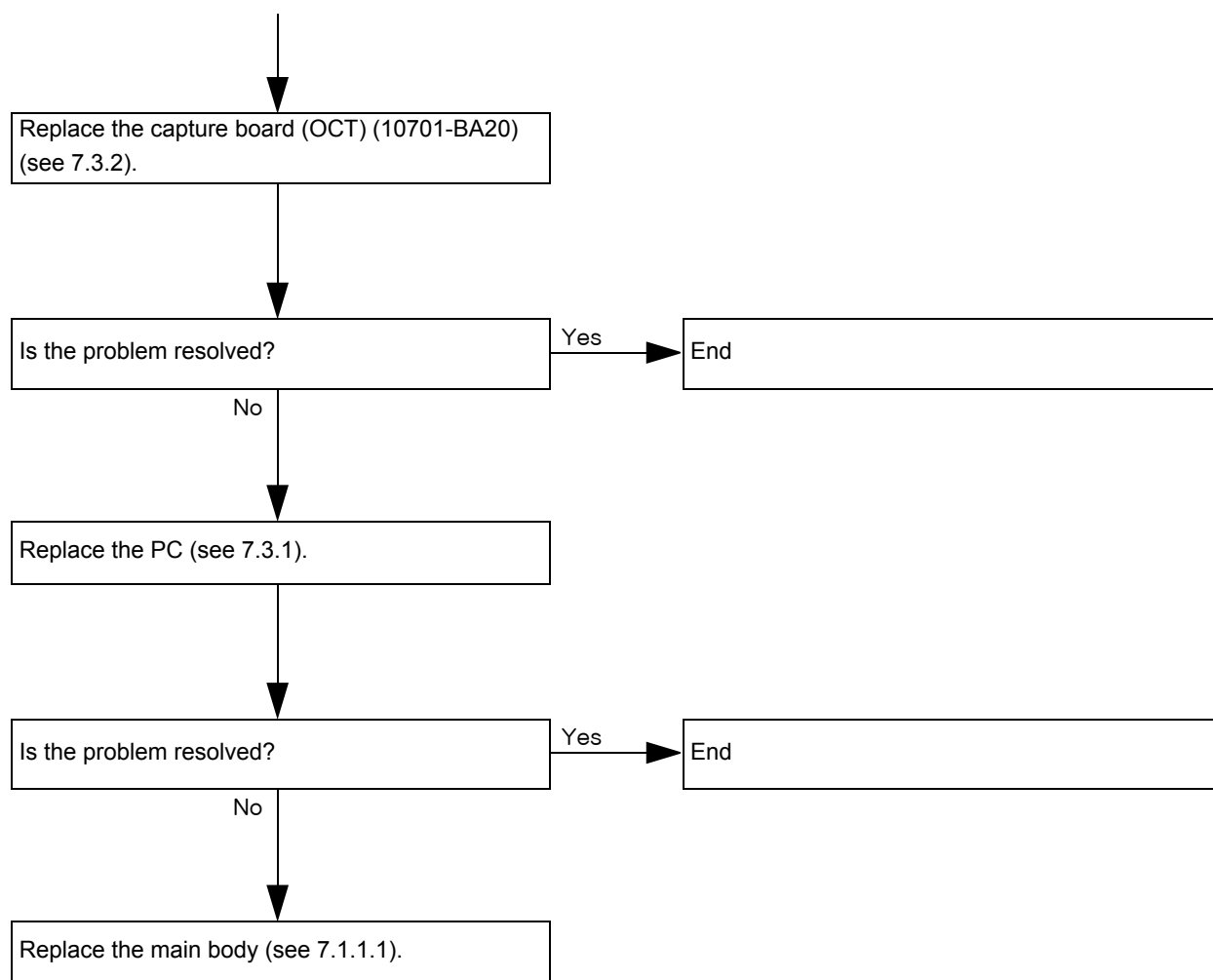
5.2.4 Error message appears on LCD monitor of main body

5.2.4.1 ERROR: 001 (EEPROM data)

Replace the main body (see 7.1.1.1).

5.2.4.2 ERROR: 002 (Connection with PC software)

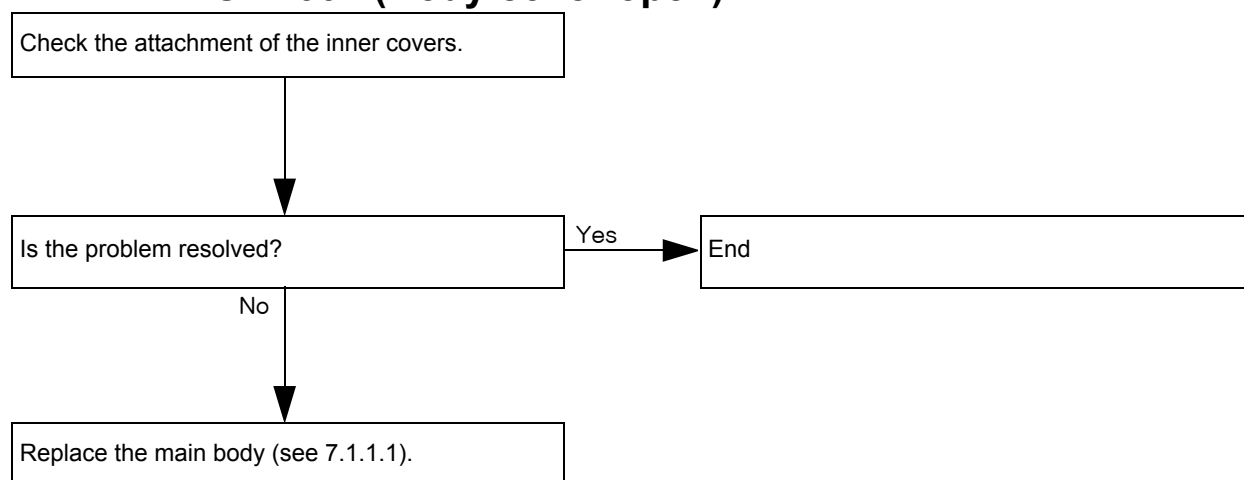




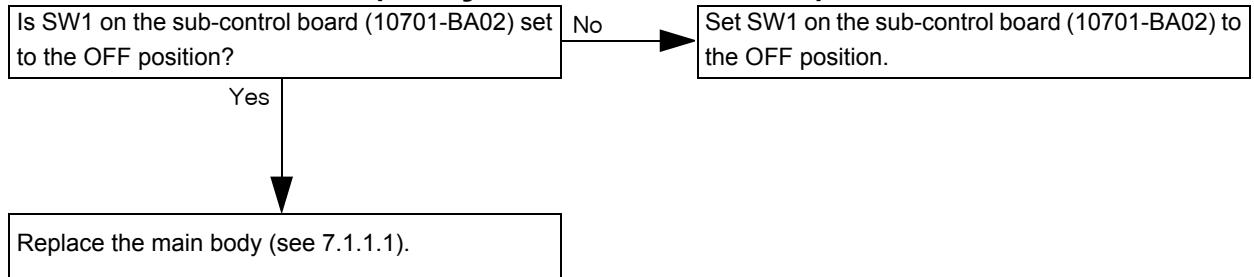
5.2.4.3 ERROR: 003 (Optical axis adjustment)

Replace the main body (see 7.1.1.1).

5.2.4.4 ERROR: 004 (Body cover open)



5.2.4.5 ERROR: 005 (Body cover DIP switch)



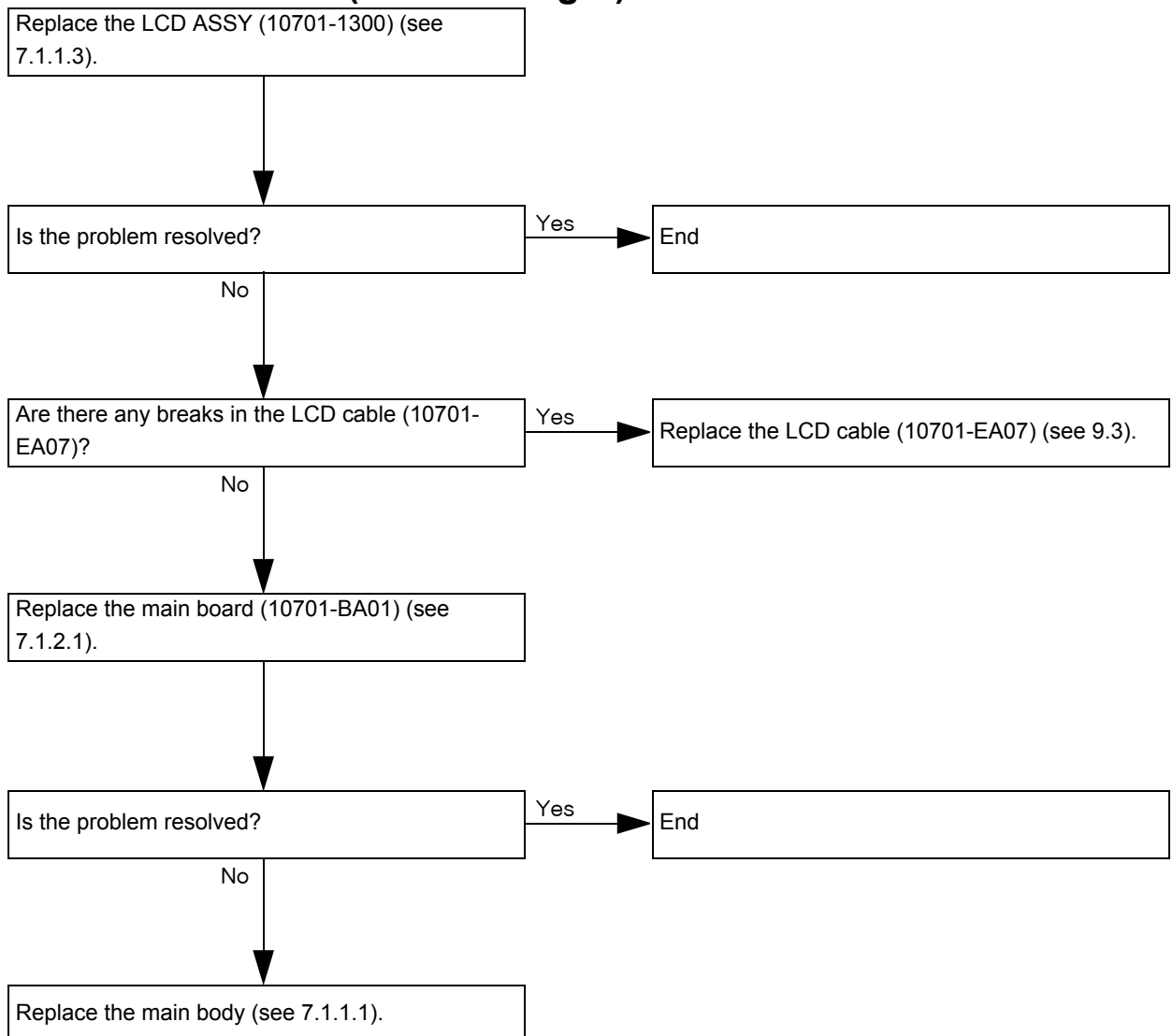
5.2.4.6 ERROR: 006 (Base cover)

Replace the main body (see 7.1.1.1).

5.2.4.7 ERROR: 007 (Base DIP switch)

Replace the main body (see 7.1.1.1).

5.2.4.8 ERROR: 008 (LCD Backlight)



5.2.4.9 ERROR: 011 (Spectrometer motor overrun)

Replace the main body (see 7.1.1.1).

5.2.4.10 ERROR: 012 (Spectrometer motor stop)

Replace the main body (see 7.1.1.1).

5.2.4.11 ERROR: 013 (OPL motor overrun)

Replace the main body (see 7.1.1.1).

5.2.4.12 ERROR: 014 (OPL motor stop)

Replace the main body (see 7.1.1.1).

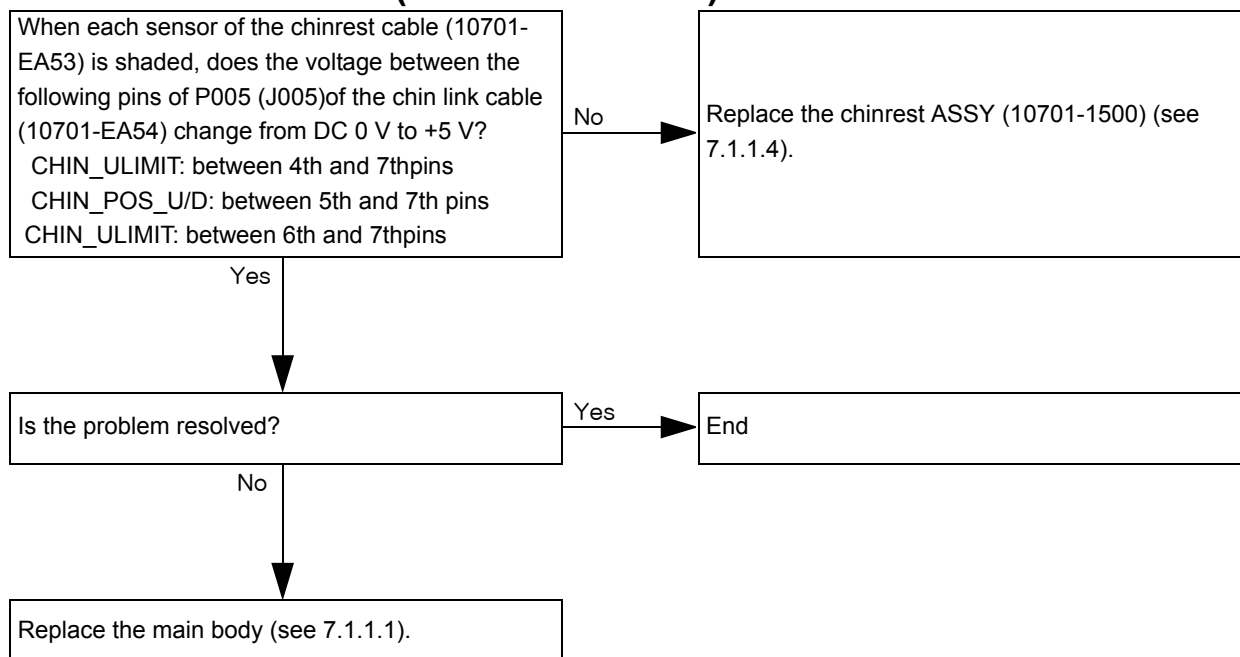
5.2.4.13 ERROR: 015 (Focus motor overrun)

Replace the main body (see 7.1.1.1).

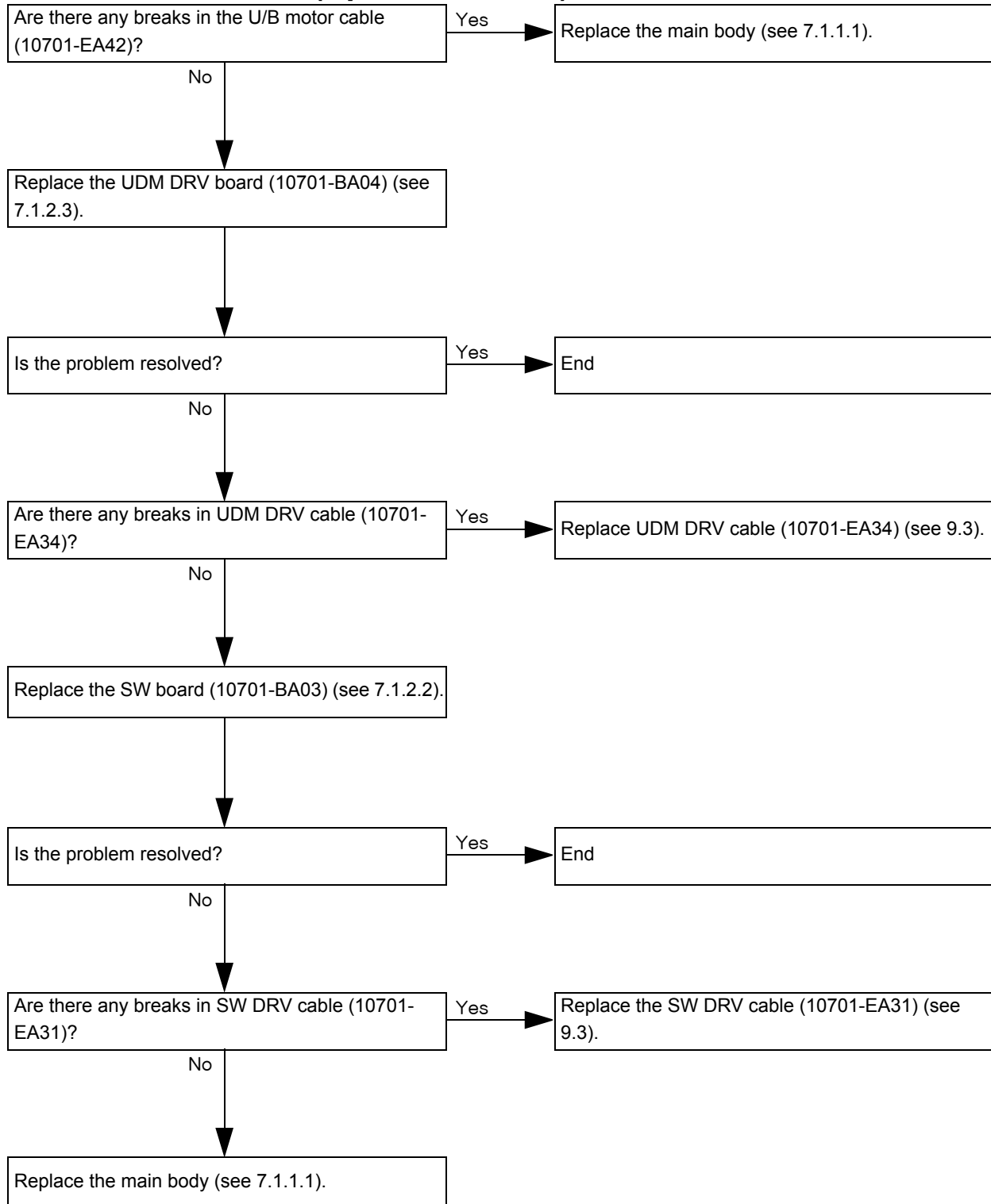
5.2.4.14 ERROR: 016 (Focus motor stop)

Replace the main body (see 7.1.1.1).

5.2.4.15 ERROR: 017 (Chin-rest motor)



5.2.4.16 ERROR: 018 (Up/Down motor)



5.2.4.17 ERROR: 021 (OCT X galvano driver)

Replace the main body (see 7.1.1.1).

5.2.4.18 ERROR: 022 (OCT Y galvano driver)

Replace the main body (see 7.1.1.1).

5.2.4.19 ERROR: 023 (OCT galvano mirror)

Replace the main body (see 7.1.1.1).

5.2.4.20 ERROR: 024 (OCT SLD

Replace the main body (see 7.1.1.1).

5.2.4.21 ERROR: 025 (OCT shutter)

Replace the main body (see 7.1.1.1).

5.2.4.22 ERROR: 026 (OCT initialization)

Replace the main body (see 7.1.1.1).

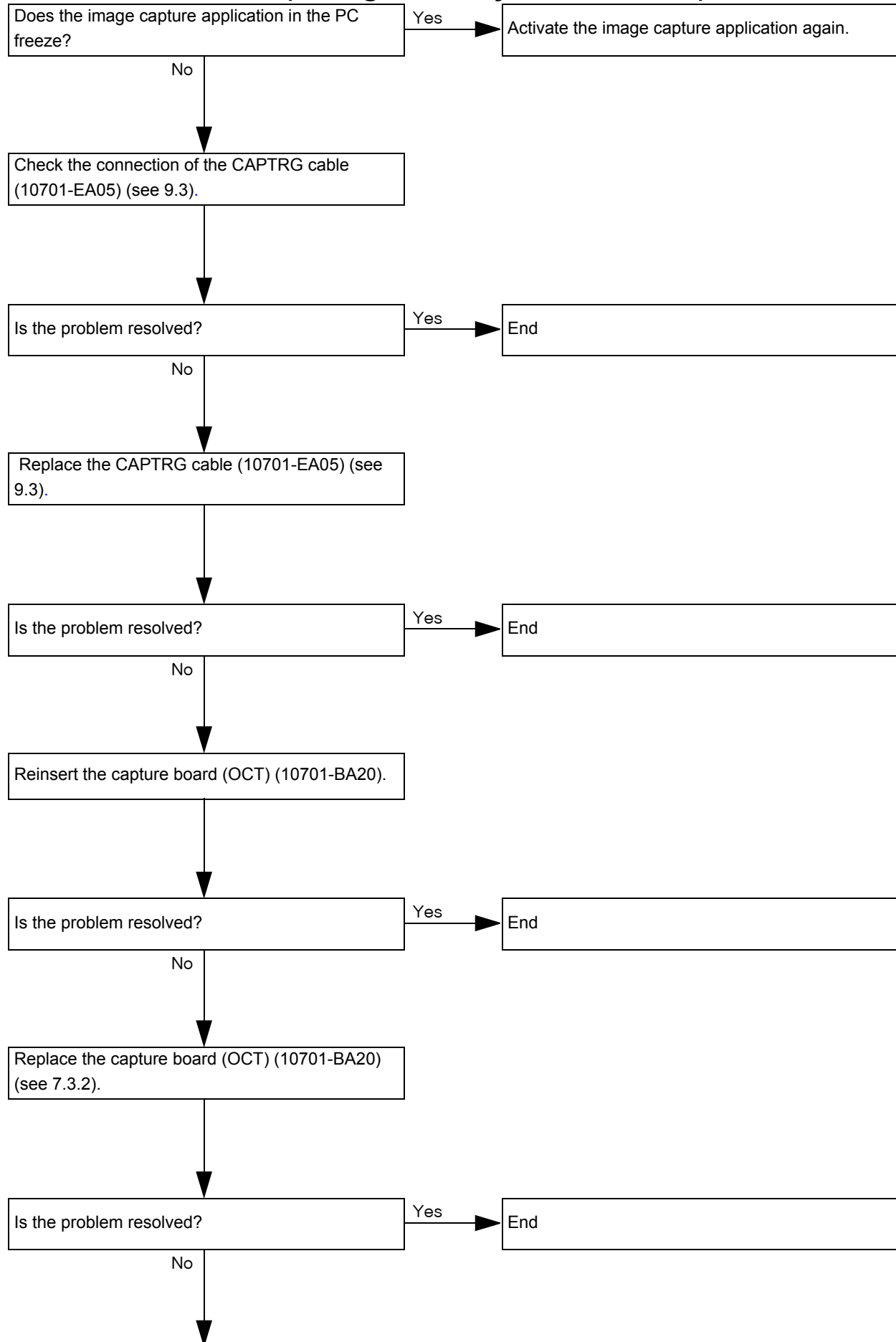
5.2.4.23 ERROR: 027 (SLD power over)

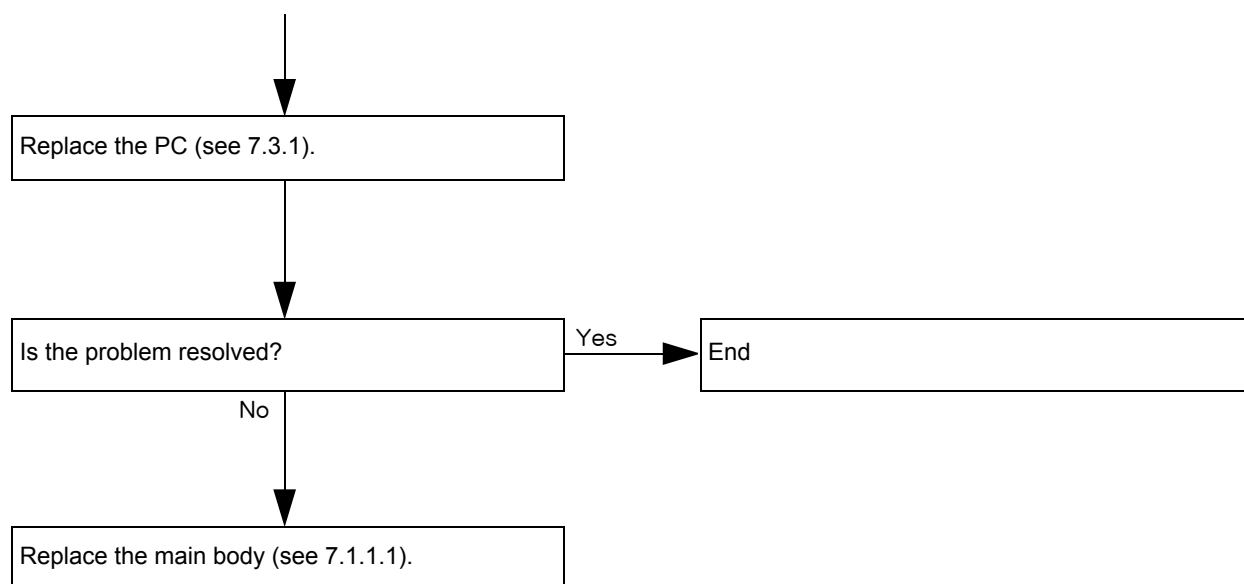
Replace the main body (see 7.1.1.1).

5.2.4.24 ERROR: 028 (Timing of SLD and LD)

Replace the main body (see 7.1.1.1).

5.2.4.25 ERROR: 029 (OCT galvano synchronization)





5.2.4.26 ERROR: 031 (SLO galvano driver)

Replace the main body (see 7.1.1.1).

5.2.4.27 ERROR: 032 (SLO galvano mirror)

Replace the main body (see 7.1.1.1).

5.2.4.28 ERROR: 033 (SLO polygon mirror)

Replace the main body (see 7.1.1.1).

5.2.4.29 ERROR: 034 (SLO polygon sensor)

Replace the main body (see 7.1.1.1).

5.2.4.30 ERROR: 035 (SLO LD)

Replace the main body (see 7.1.1.1).

5.2.4.31 ERROR: 036 (FIX LD)

Replace the main body (see 7.1.1.1).

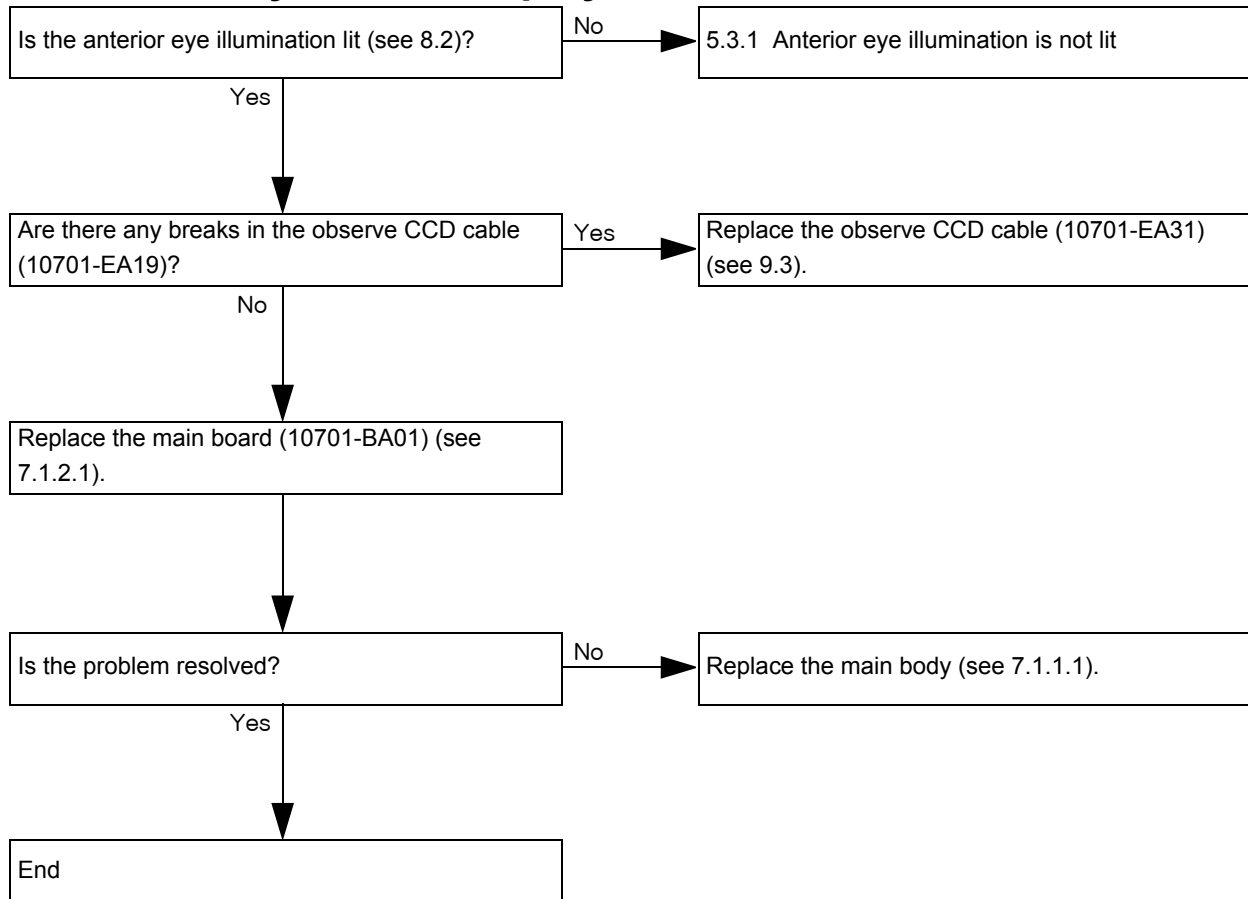
5.2.4.32 ERROR: 037 (SLO shutter)

Replace the main body (see 7.1.1.1).

5.2.5 Initialization is not completed

Replace the main body (see 7.1.1.1).

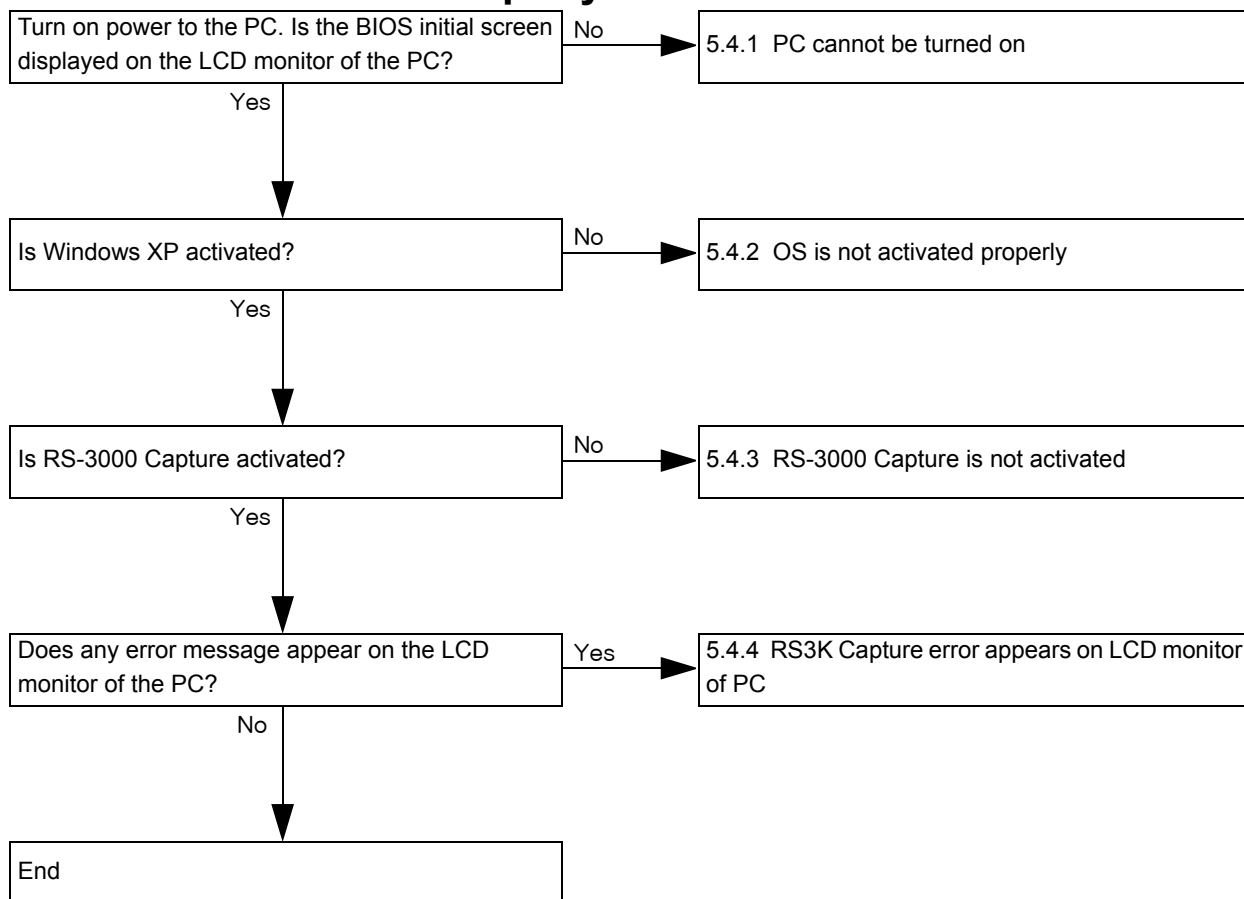
5.3 Anterior Eye is not Displayed



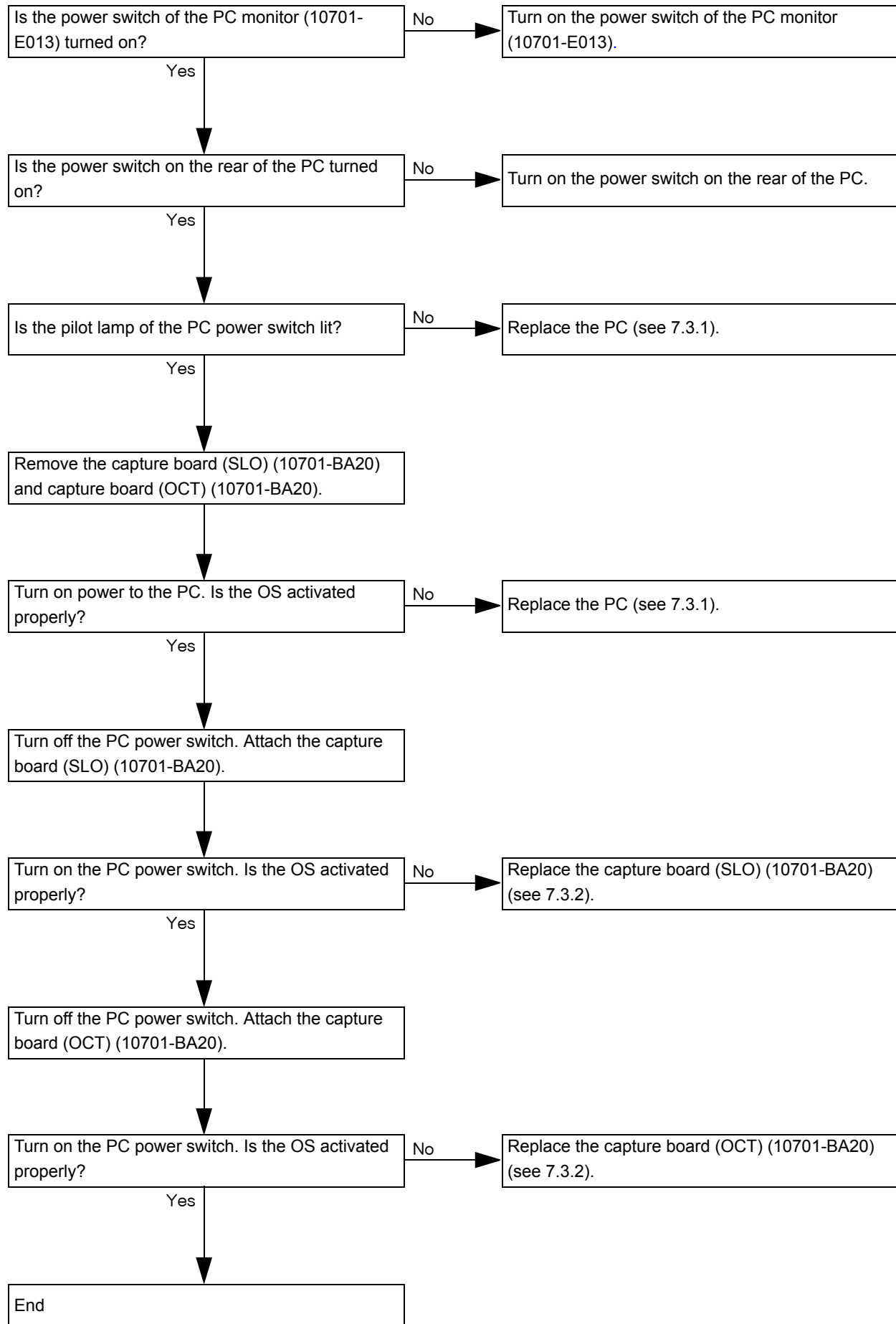
5.3.1 Anterior eye illumination is not lit

Replace the main body (see 7.1.1.1).

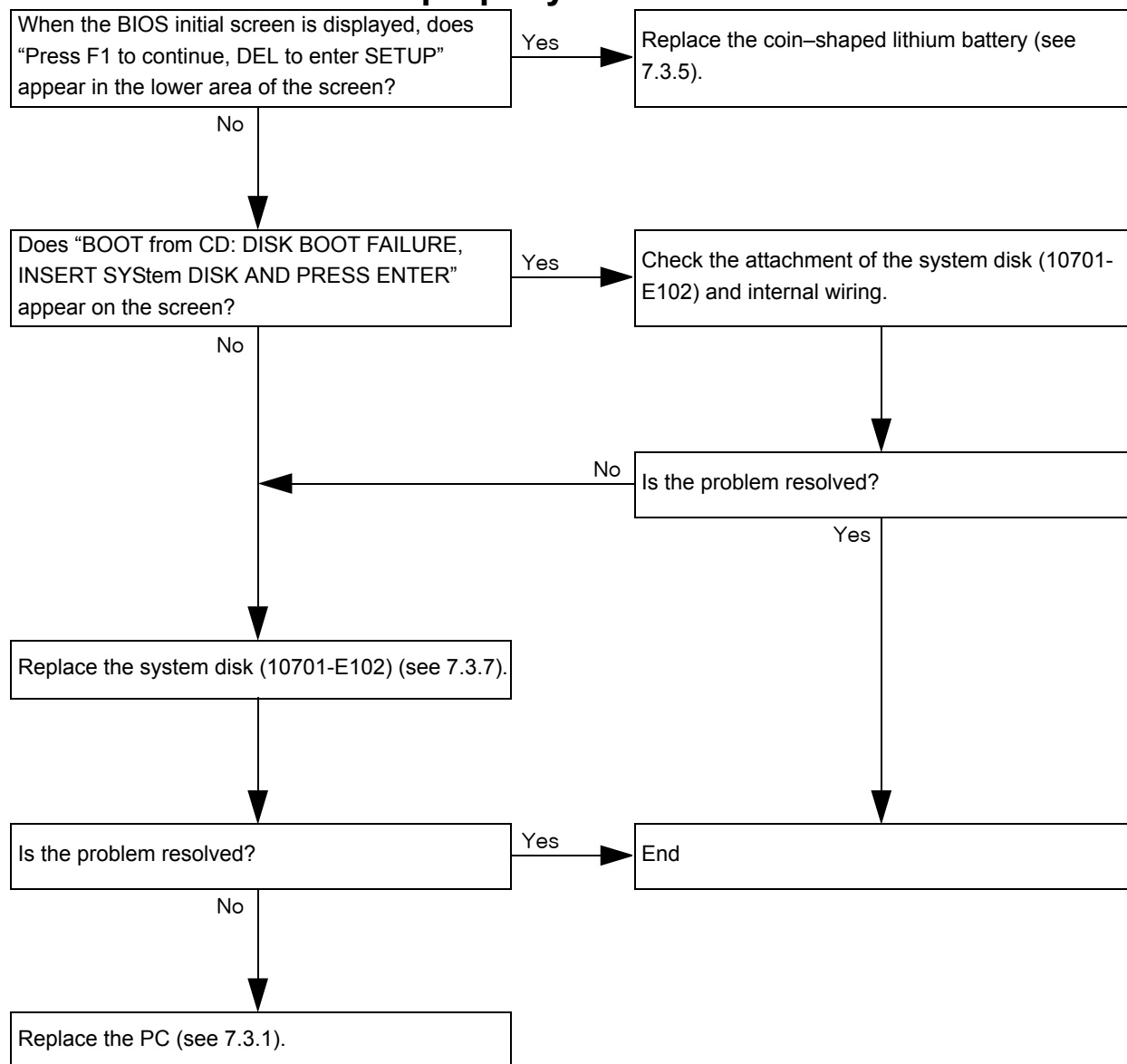
5.4 PC does not Start Properly



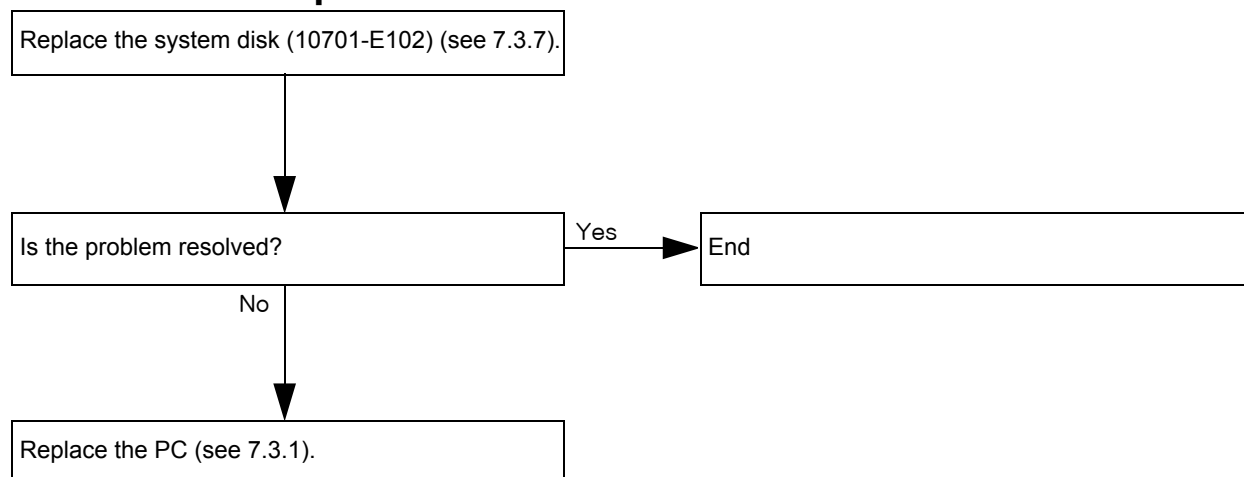
5.4.1 PC cannot be turned on



5.4.2 OS is not activated properly



5.4.3 RS-3000 Capture is not activated

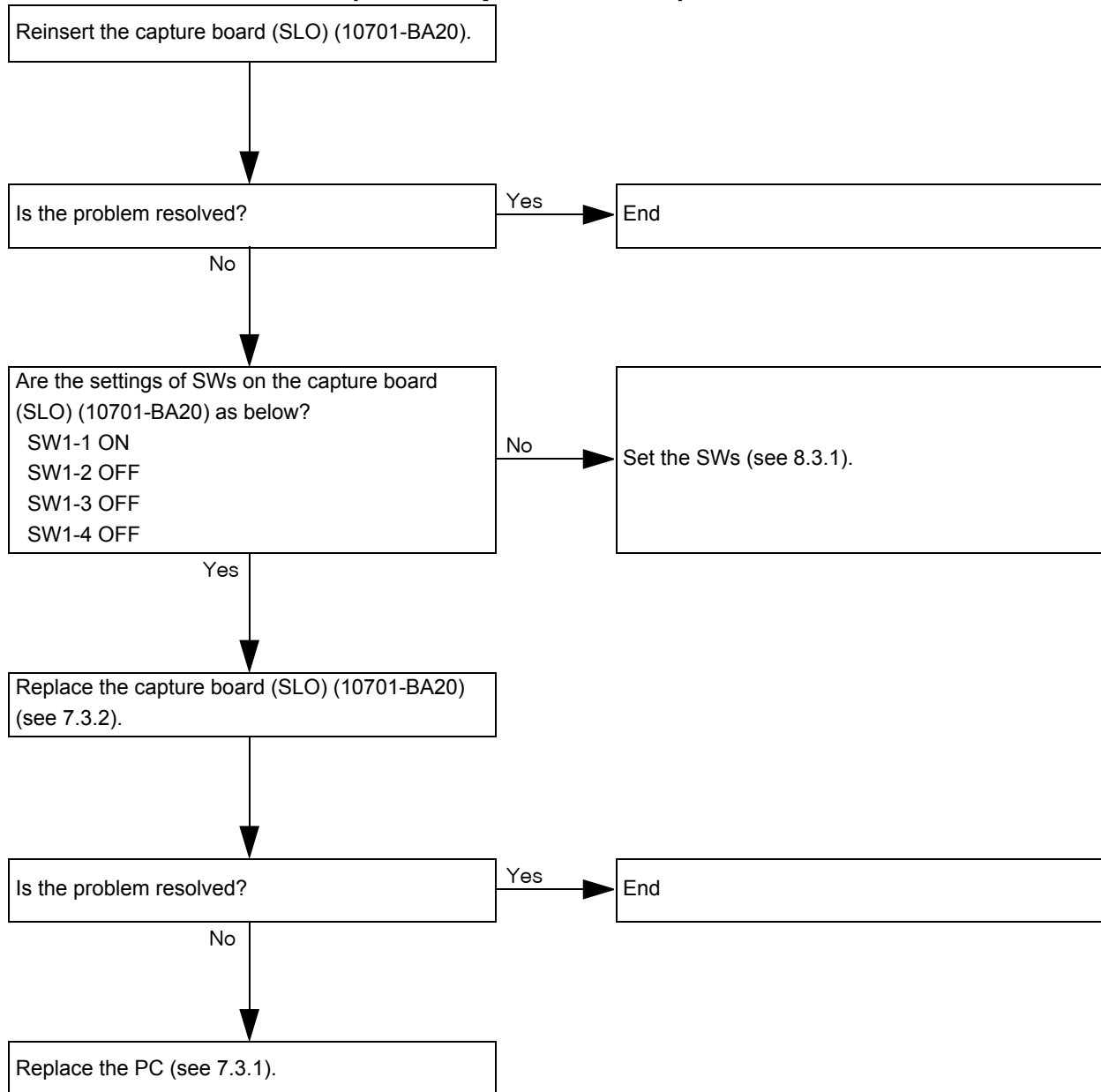


5.4.4 RS3K Capture error appears on LCD monitor of PC

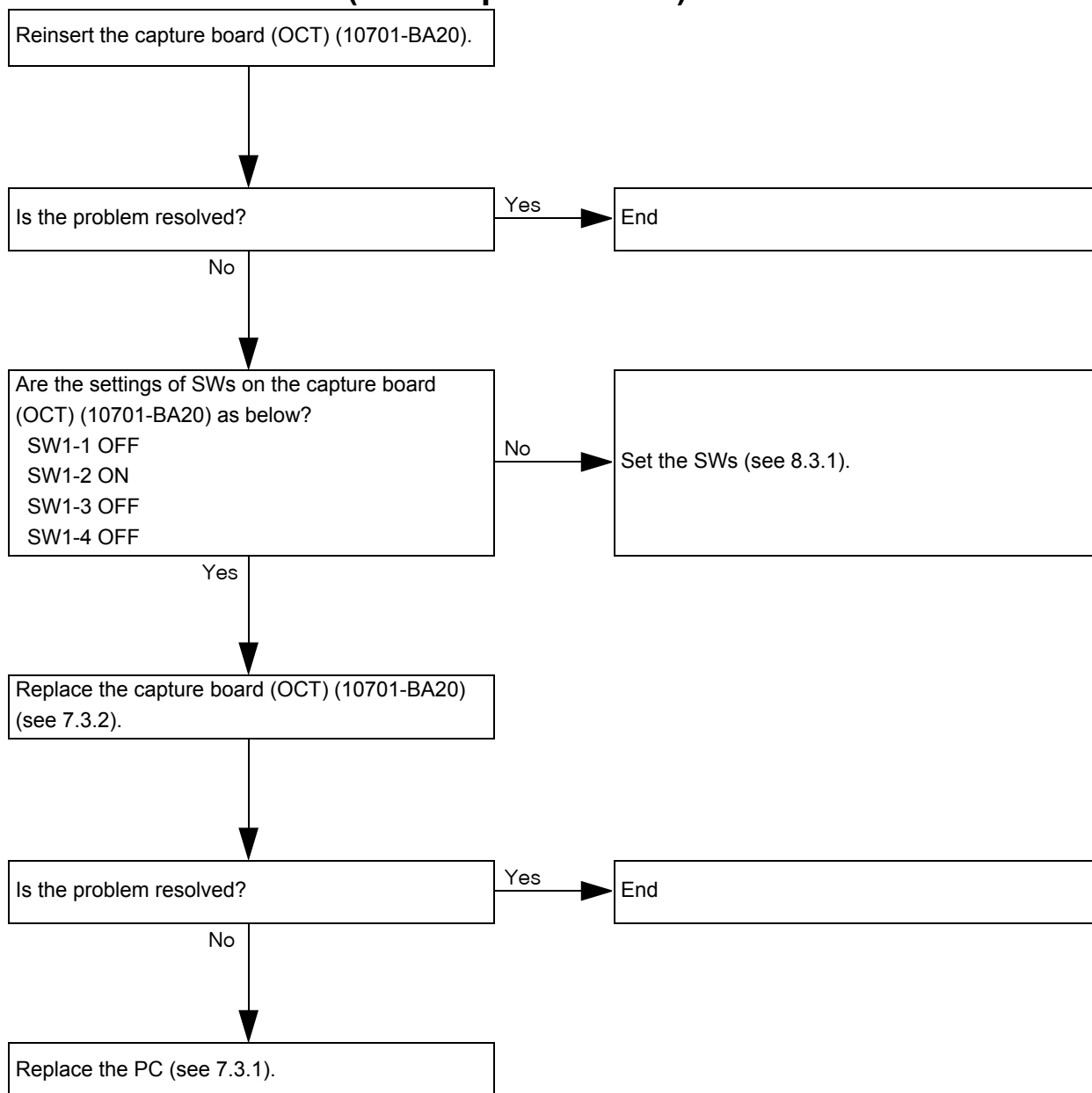
5.4.4.1 ERROR: 1001 (Connection with DB software)

Replace the PC (see 7.3.1).

5.4.4.2 ERROR: 1002 (SLO capture board)



5.4.4.3 ERROR: 1003 (OCT capture board)



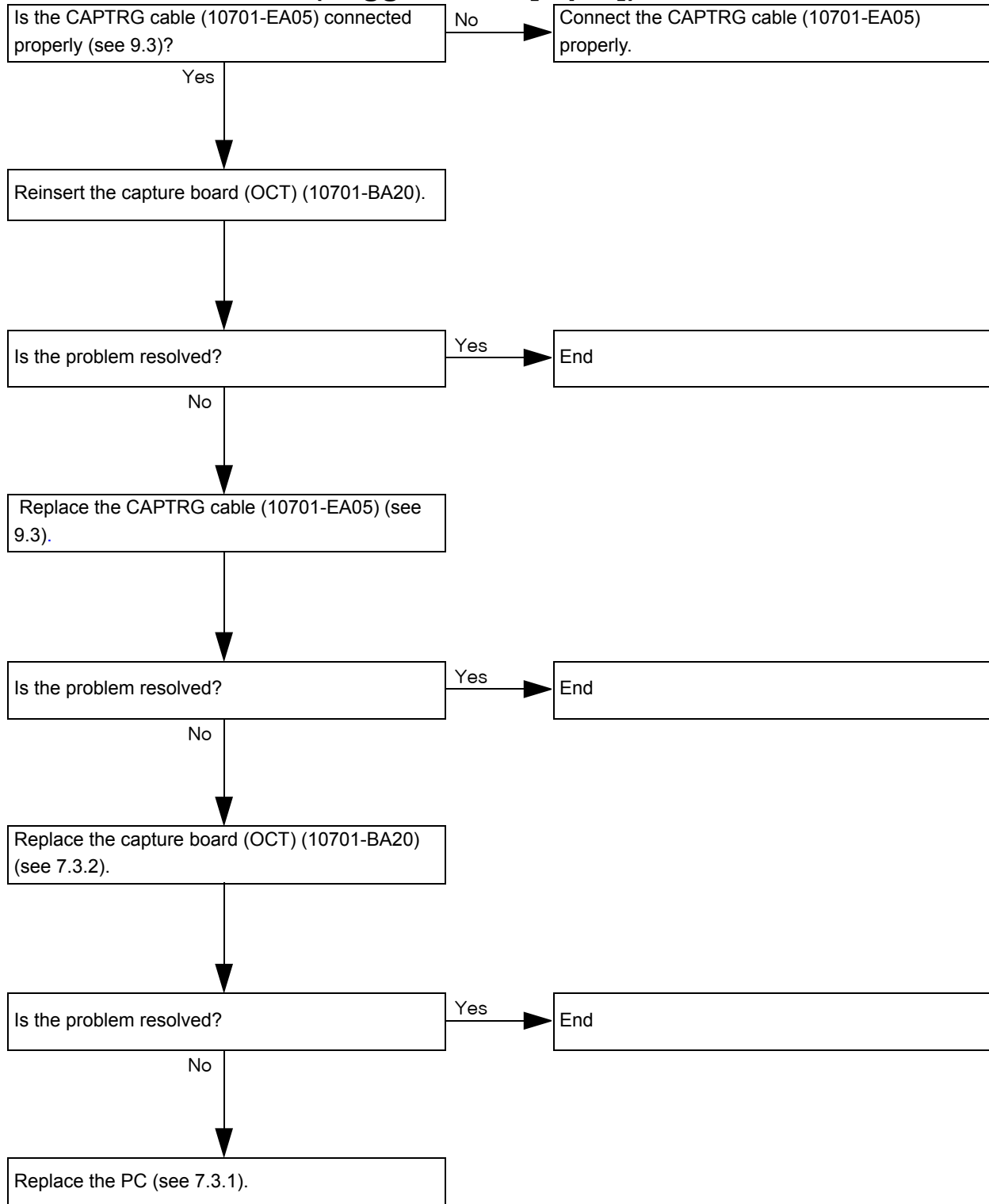
5.4.4.4 ERROR: 1004 (Limit over capture board)

Remove the capture board (10701-BA20) which is not in use.

5.4.4.5 ERROR: 1011 (System information)

Confirm the software version of the main body.

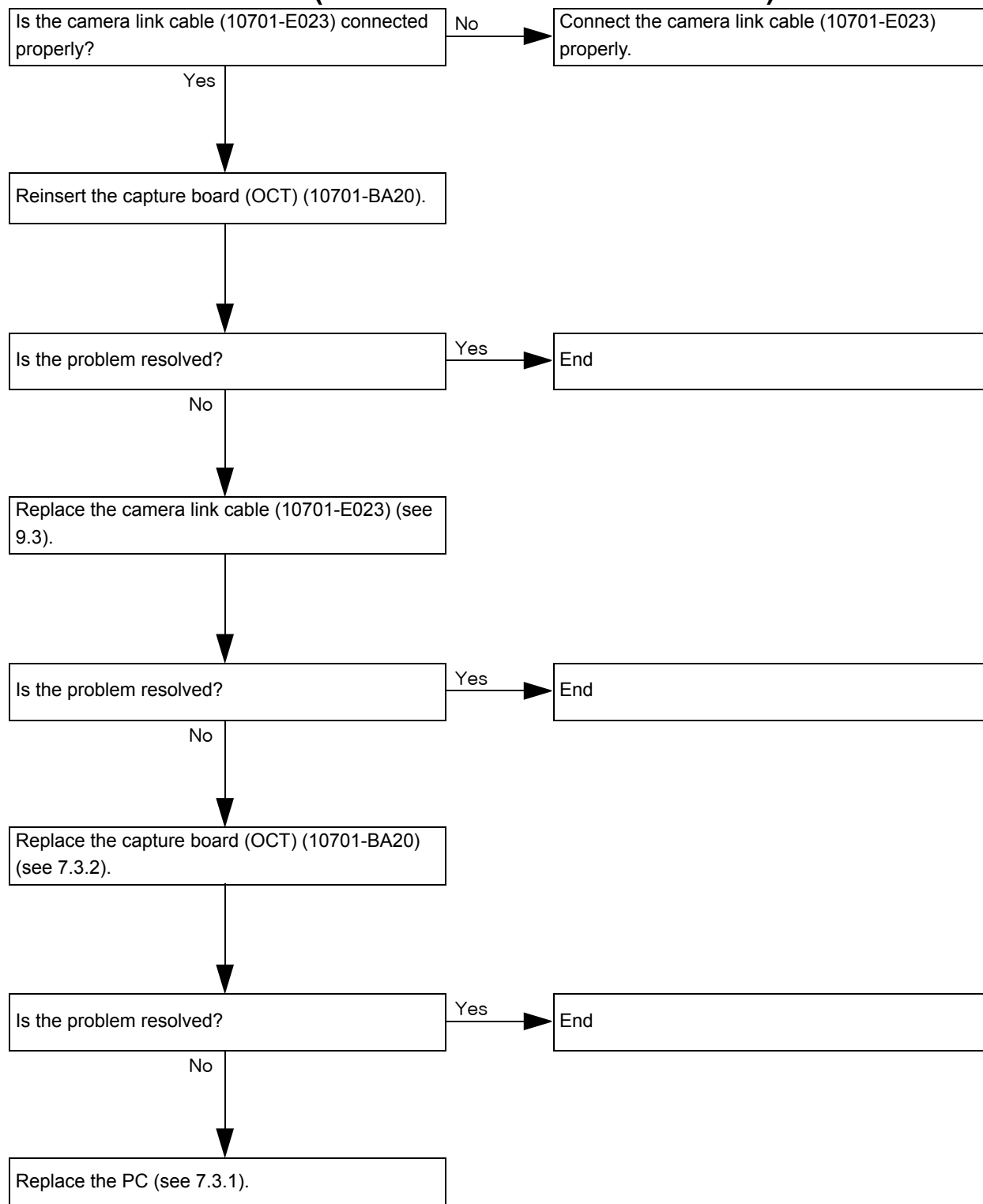
5.4.4.6 ERROR: 1012 (Trigger cable [input])



5.4.4.7 ERROR: 1013 (Trigger cable [output])

Perform the procedure as in 5.4.4.6 ERROR: 1012 (Trigger cable [input]).

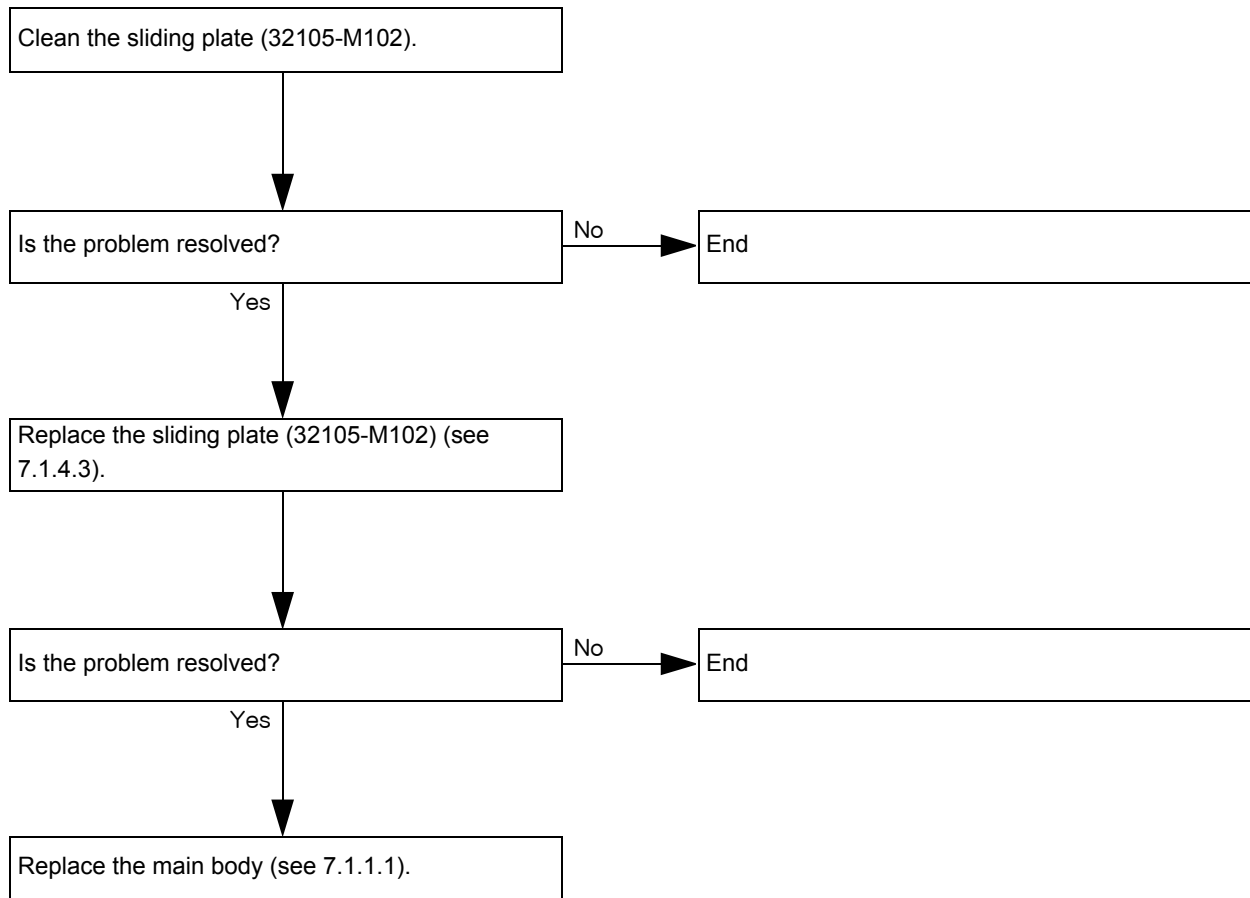
5.4.4.8 ERROR: 1014 (Connection with CCD camera)



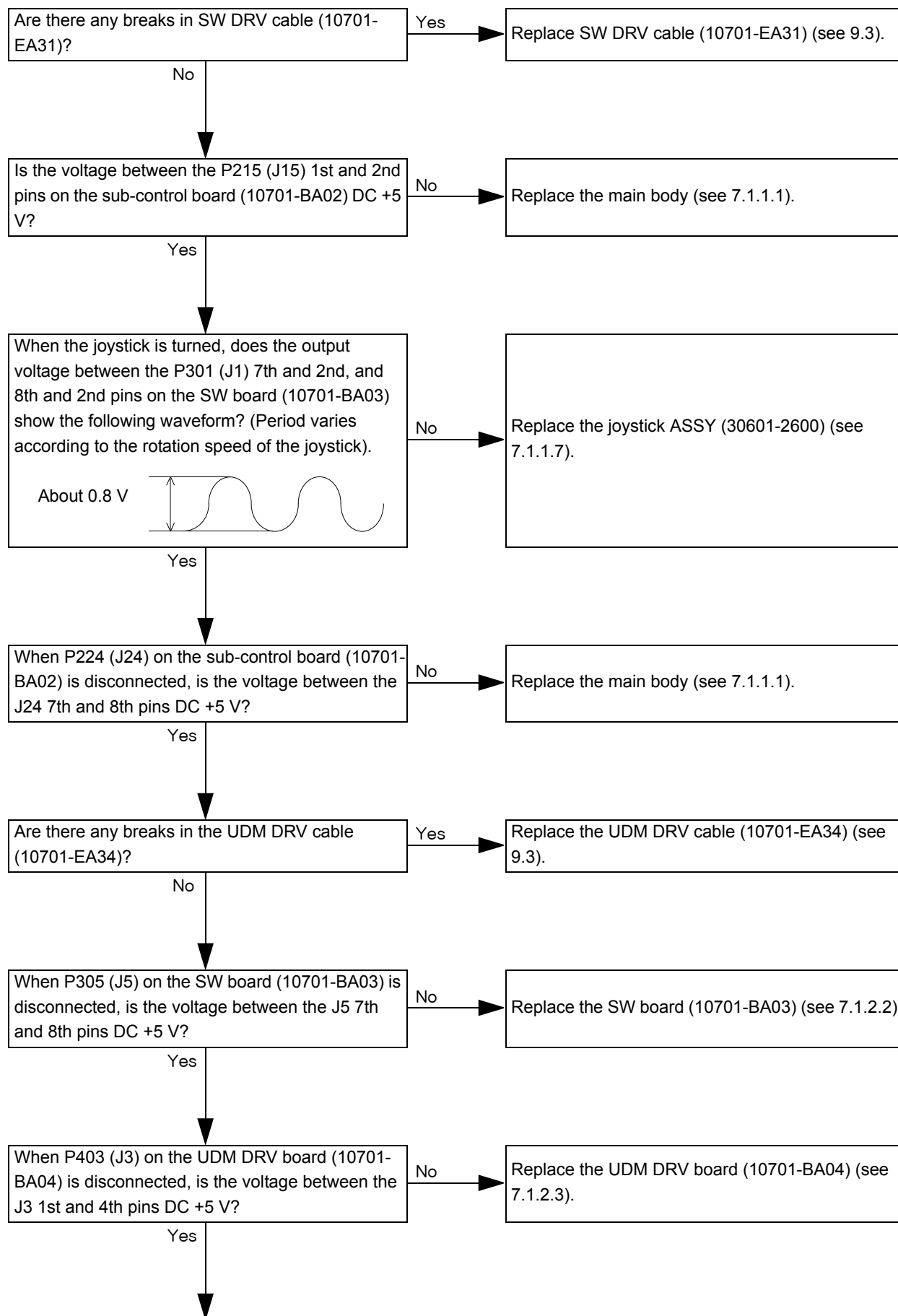
5.4.4.9 ERROR: 1015 (OCT calibration file)

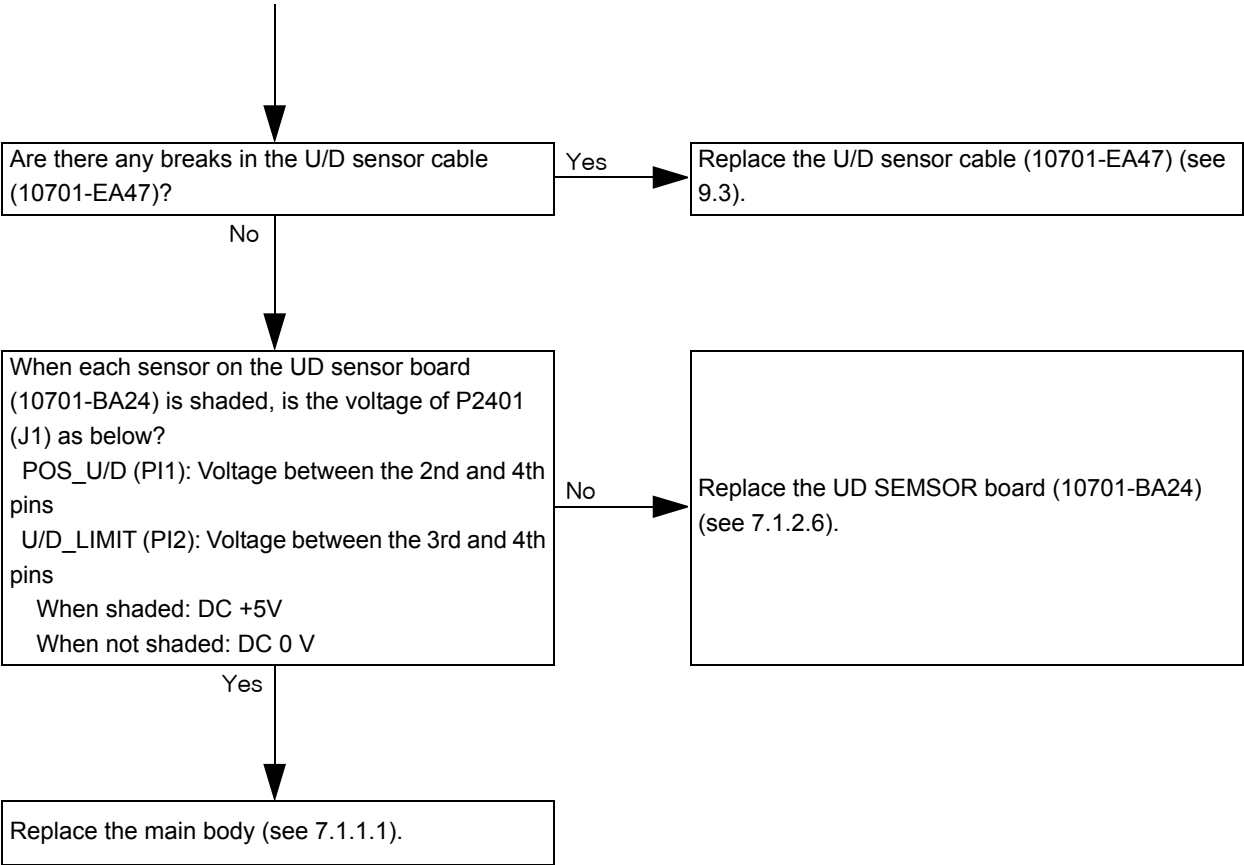
Read the OCT calibration file corresponding to the serial number of the main body (see 8.4).

5.5 Image Capturing Unit does not Move Smoothly along Base Unit

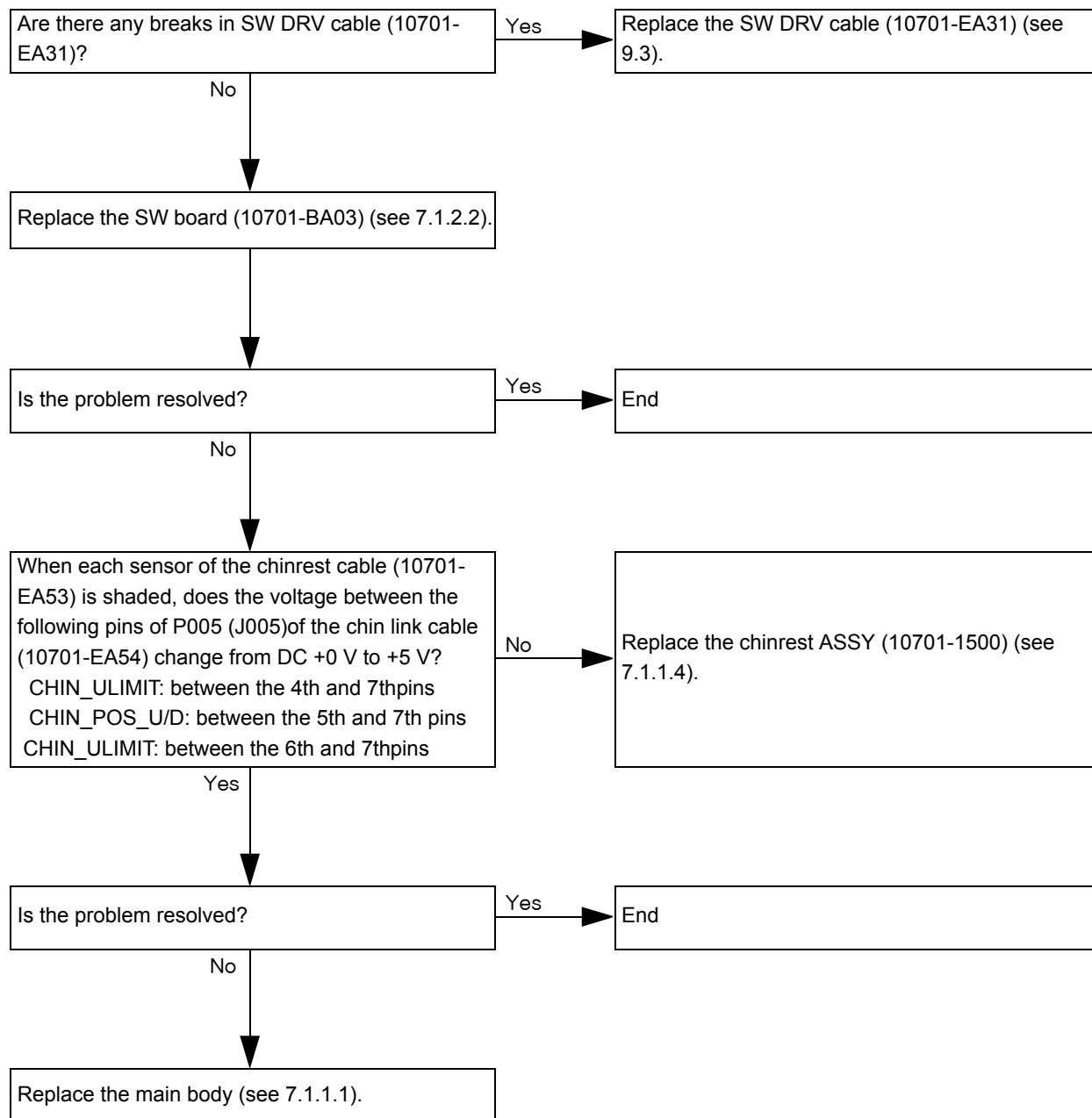


5.6 Turning Joystick does not Move Image Capturing Unit Up or Down

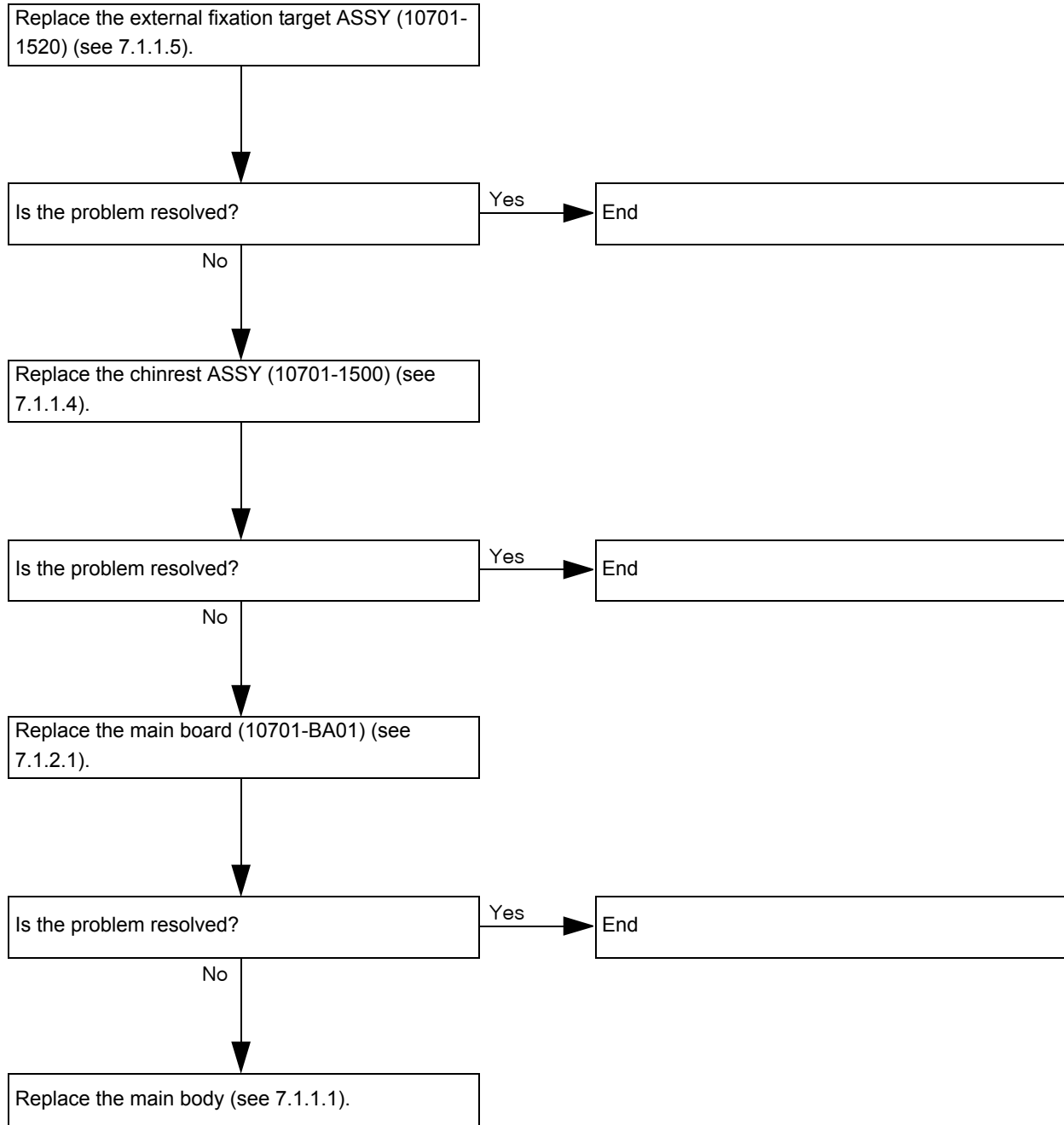




5.7 Chinrest does not Move



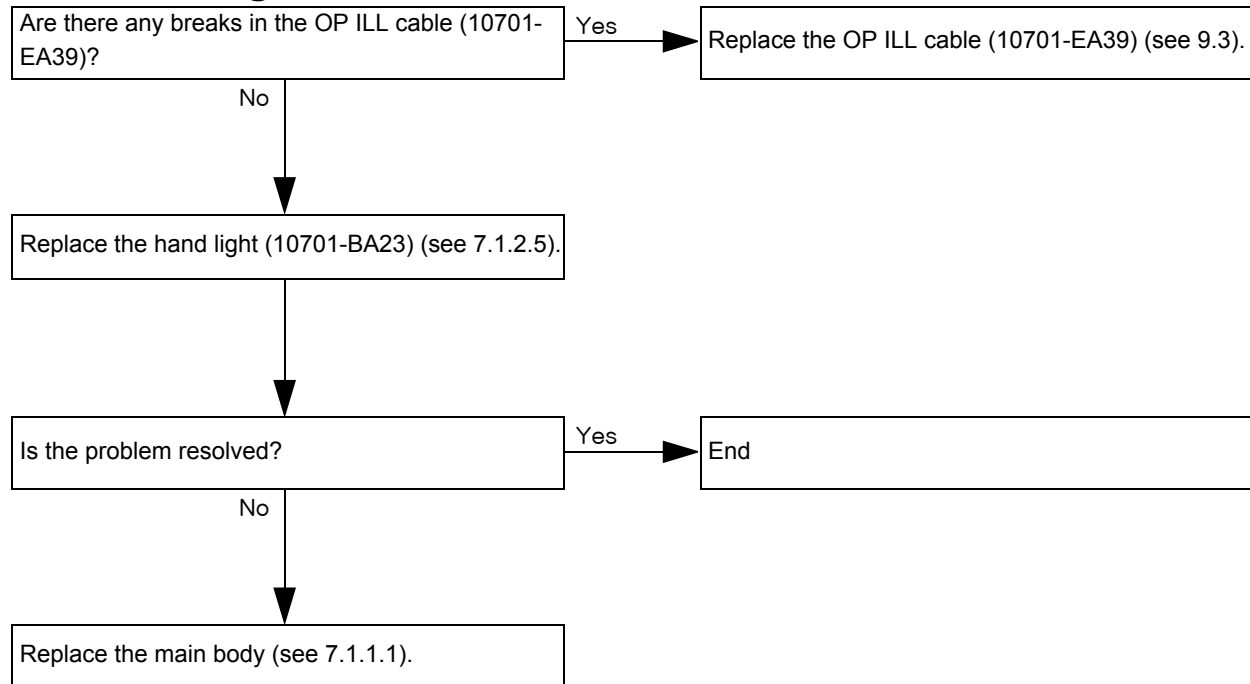
5.8 External Fixation Target does not Light Up



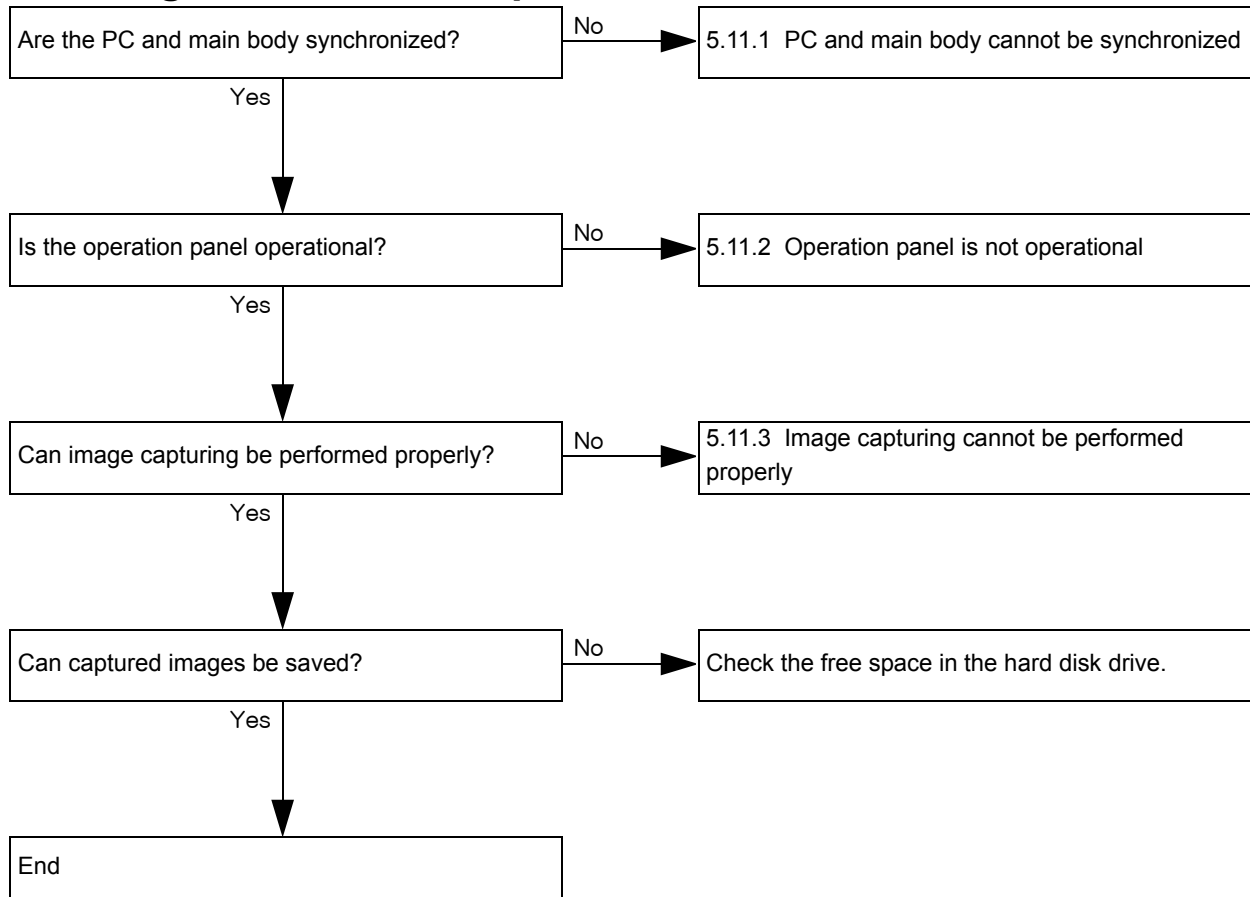
5.9 Internal Fixation Target does not Light Up

Replace the main body (see 7.1.1.1).

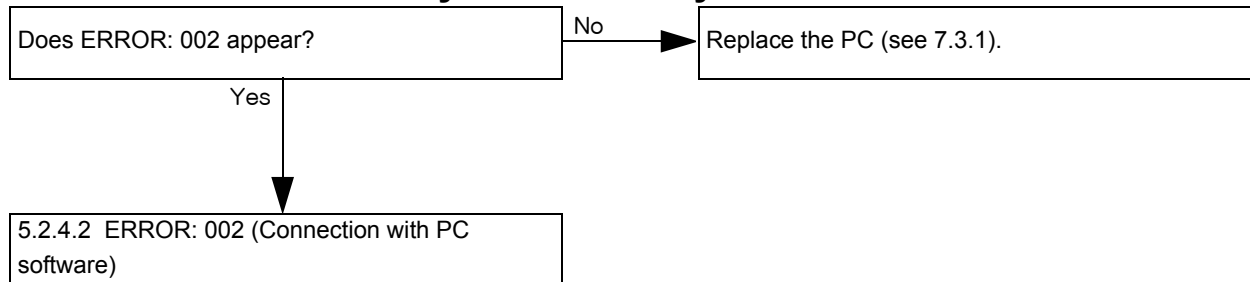
5.10 Hand Light does not Go On



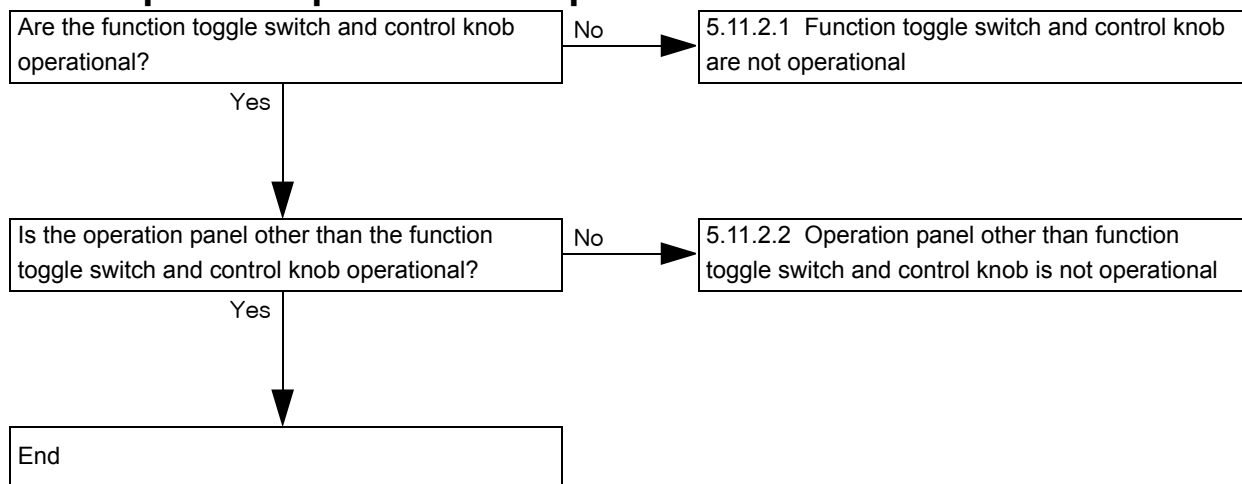
5.11 Images cannot be Captured



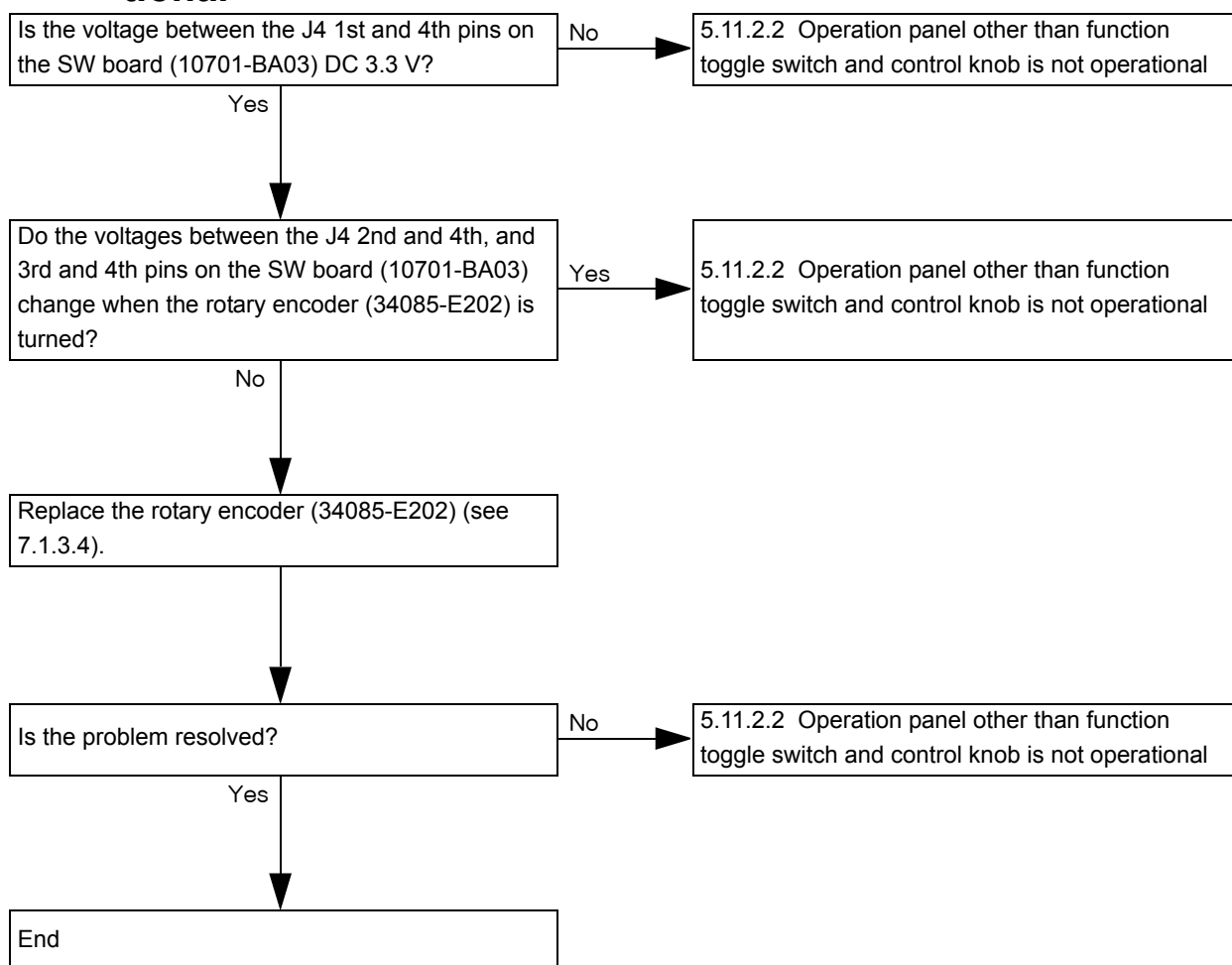
5.11.1 PC and main body cannot be synchronized



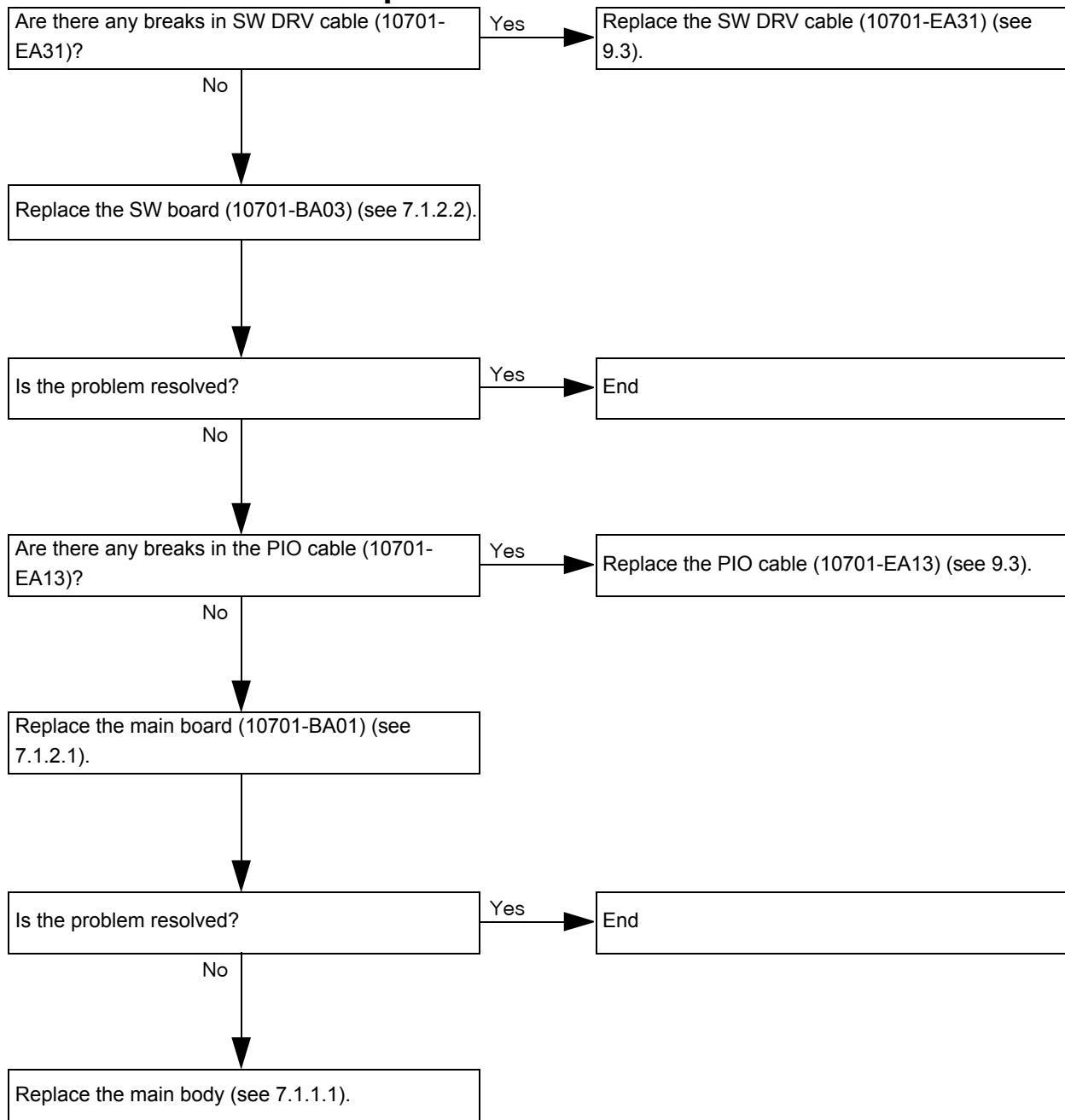
5.11.2 Operation panel is not operational



5.11.2.1 Function toggle switch and control knob are not operational



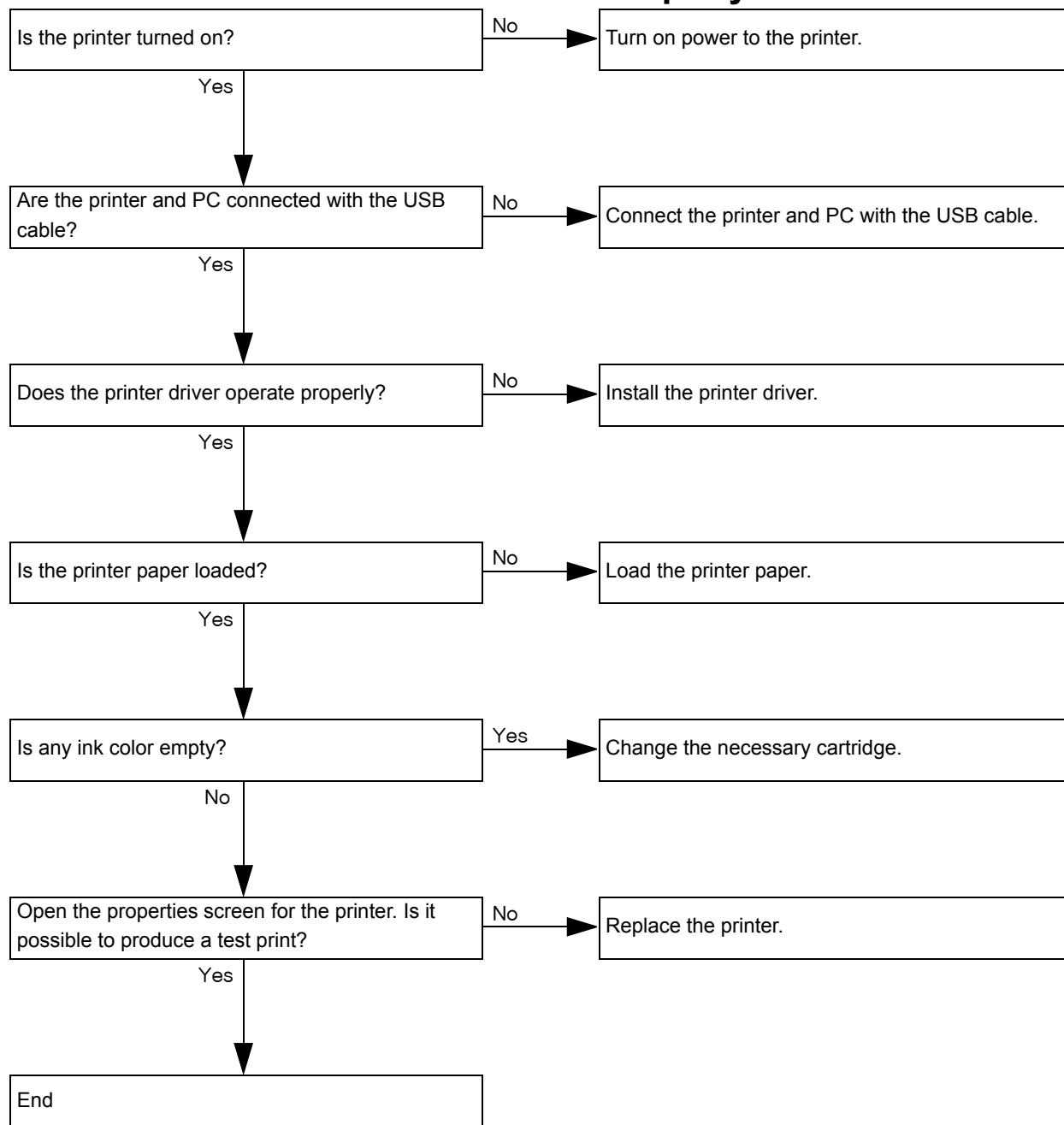
5.11.2.2 Operation panel other than function toggle switch and control knob is not operational



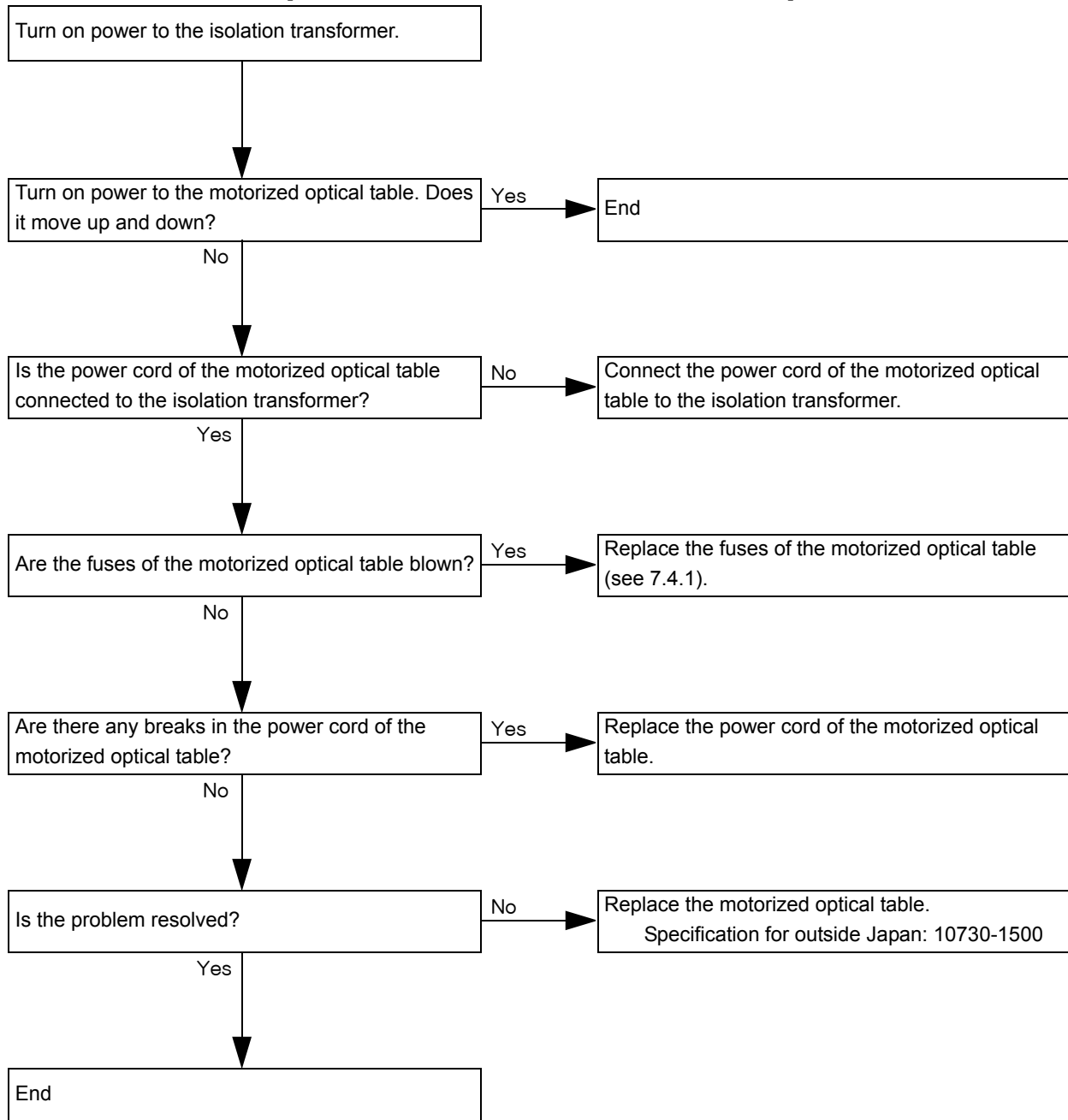
5.11.3 Image capturing cannot be performed properly

Replace the main body (see 7.1.1.1).

5.12 Printout cannot be Performed Properly



5.13 Motorized Optical Table does not Move Up or Down

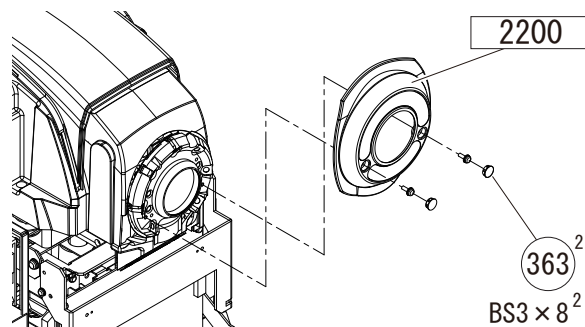


6 REMOVAL PROCEDURE

6.1 Removing Main Body Covers

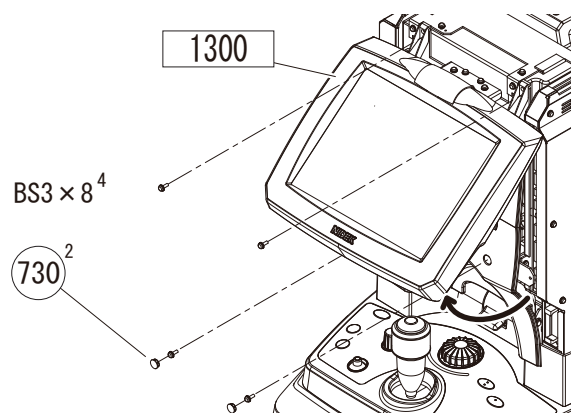
6.1.1 Objective lens cover ASSY (10701-2200)

- 1 . Remove the front cover (10701-M701) (see 6.1.5).
- 2 . Remove the caps (34500-M363 [n =2]).
- 3 . Unscrew BS3 × 8 (n = 2).
- 4 . Remove the objective lens cover ASSY (10701-2200).
- 5 . Reassemble the parts in the reverse order.

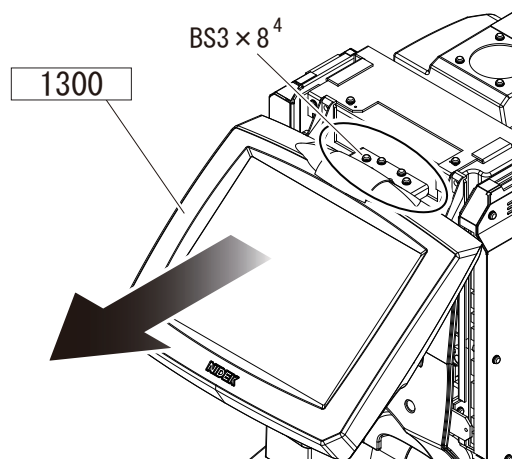


6.1.2 Rear cover ASSY (10701-2300)

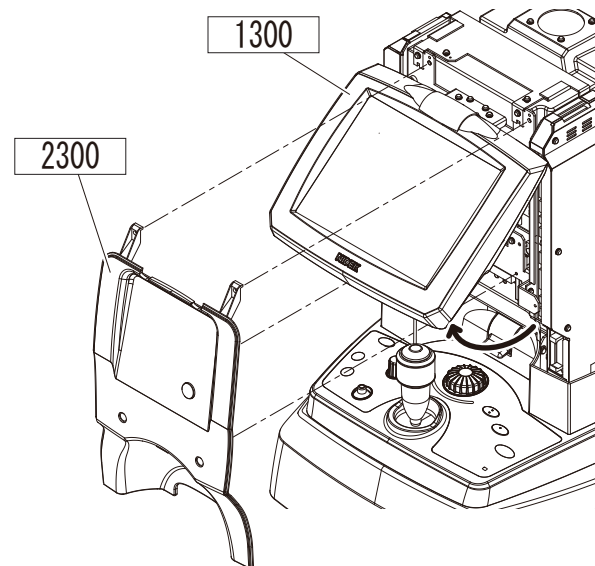
- 1 . Remove the left cover (10701-M704) (see 6.1.7).
- 2 . Remove the right cover (10701-M705) (see 6.1.8).
- 3 . Remove the top cover (10701-M702) (see 6.1.6).
- 4 . Tilt the LCD ASSY (10701-1300).
- 5 . Remove the caps (32105-M730 [n = 2]).
- 6 . Unscrew BS3 × 8 (n = 4).



- 7 . Loosen BS3 × 8 (n = 4) to slide the LCD ASSY (10701-1300) toward the examiner.

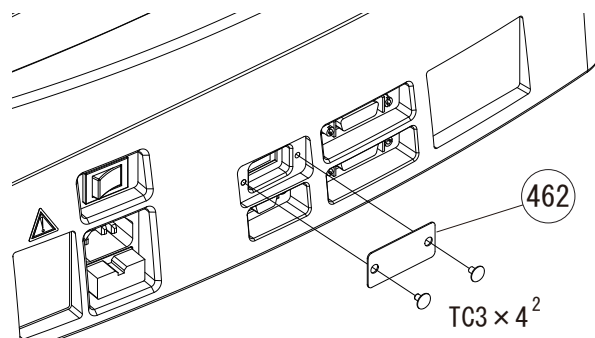


- 8 . Remove the rear cover ASSY (10701-2300).
- 9 . Reassemble the parts in the reverse order.



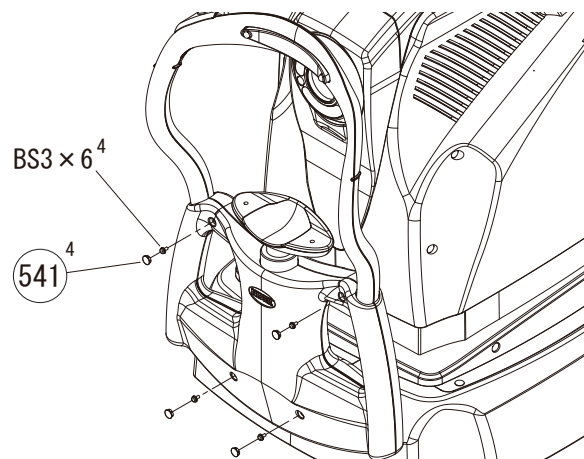
6.1.3 Lid (10701-M462)

- 1 . Unscrew TC3 × 4 (n = 2).
- 2 . Remove the lid (10701-M462).
- 3 . Reassemble the parts in the reverse order.

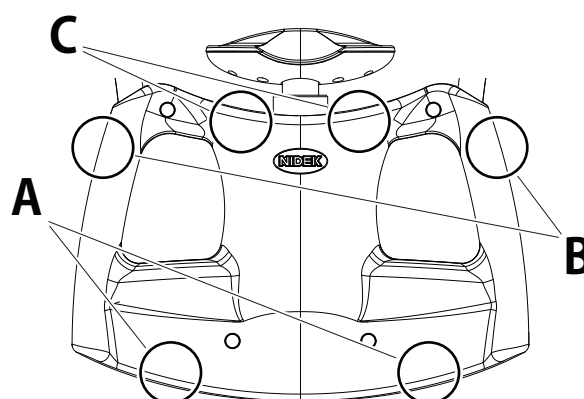


6.1.4 Chinrest ASSY front cover (10701-M502)

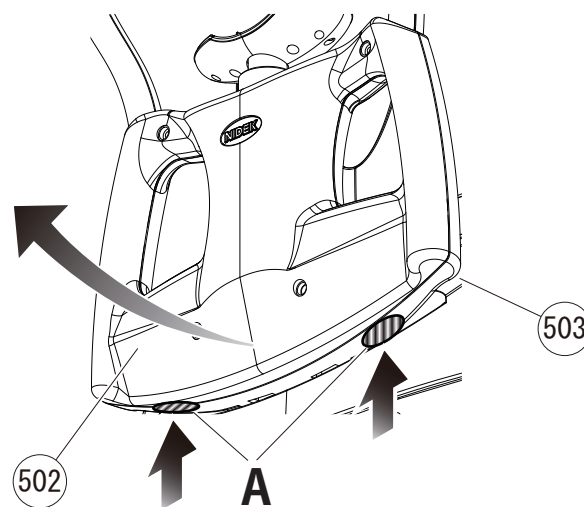
- 1 . Remove the caps (32909-M541 [n =4]).
- 2 . Unscrew BS3 × 6 (n = 4).



- 3 . Follow the steps below to release the six hooks and remove the front cover (10701-M502).

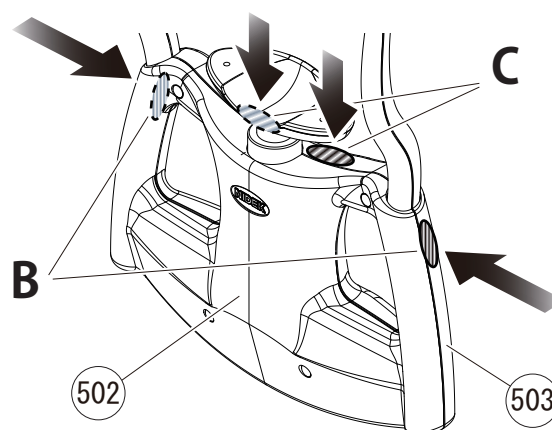


- 1) While pressing the A areas of the rear cover (10701-M503), pull the front cover (10701-M502) to release the hooks in the A areas.



- 2) While pressing the B areas of the rear cover (10701-M503), release the hooks in the B areas of the front cover.

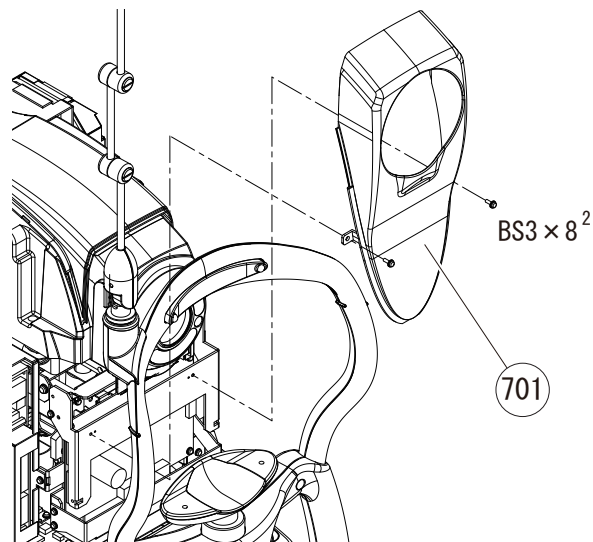
- 3) While pressing the C areas of the rear cover (10701-M503), release the hooks in the C areas of the front cover (10701-M502).



4. Reassemble the parts in the reverse order.

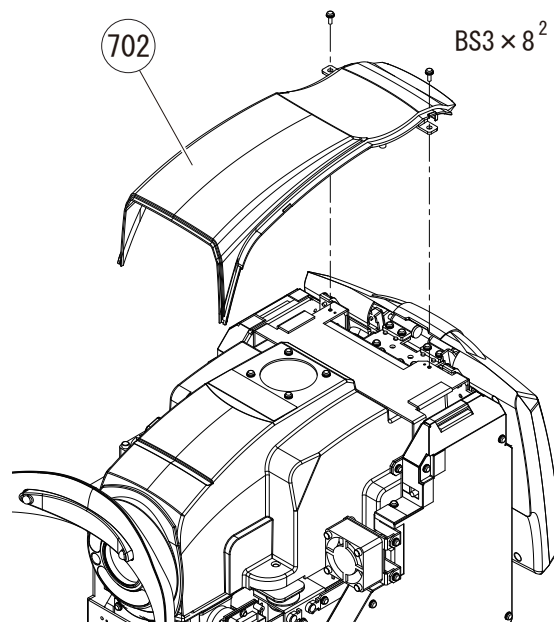
6.1.5 Front cover (10701-M701)

- 1 . Remove the left cover (10701-M704) (see 6.1.7).
- 2 . Remove the right cover (10701-M705) (see 6.1.8).
- 3 . Unscrew BS3 × 8 (n = 2).
- 4 . Remove the front cover (10701-M701).
- 5 . Reassemble the parts in the reverse order.



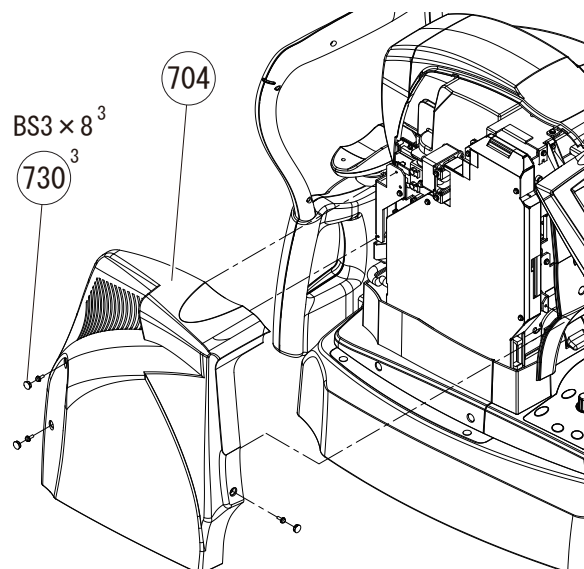
6.1.6 Top cover (10701-M702)

- 1 . Remove the front cover (10701-M701) (see 6.1.5).
- 2 . Unscrew BS3 × 8 (n = 2).
- 3 . Remove the top cover (10701-M702).
- 4 . Reassemble the parts in the reverse order.



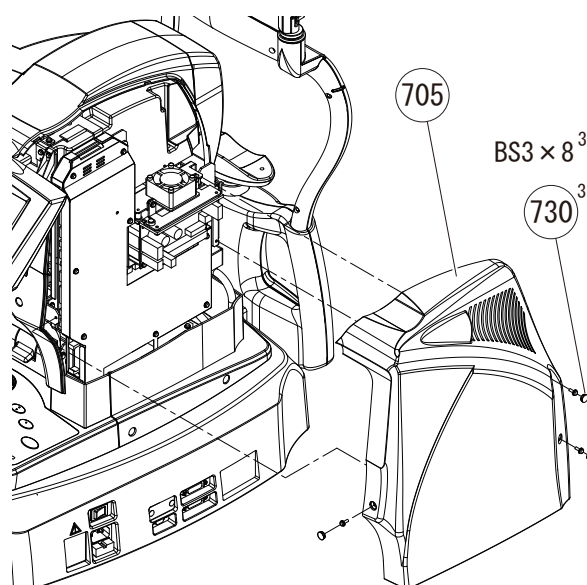
6.1.7 Left cover (10701-M704)

- 1 . Remove the caps (32105-M730 [n = 3]).
- 2 . Unscrew BS3 × 8 (n = 3).
- 3 . Remove the left cover (10701-M704).
- 4 . Reassemble the parts in the reverse order.



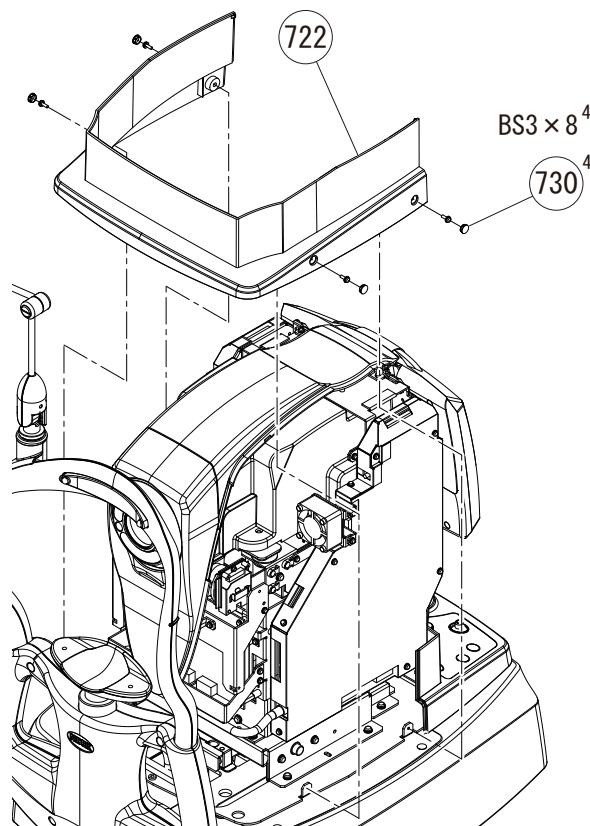
6.1.8 Right cover (10701-M705)

- 1 . Remove the caps (32105-M730 [n = 3]).
- 2 . Unscrew BS3 × 8 (n = 3).
- 3 . Remove the right cover (10701-M705).
- 4 . Reassemble the parts in the reverse order.



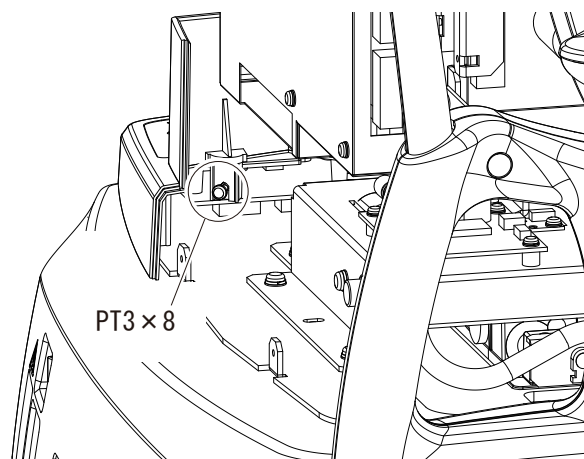
6.1.9 Body front cover (10701-M722)

- 1 . Remove the left cover (10701-M704) (see 6.1.7).
- 2 . Remove the right cover (10701-M705) (see 6.1.8).
- 3 . Remove the caps (32105-M730 [n = 4]).
- 4 . Unscrew BS3 × 8 (n = 4).
- 5 . Remove the body front cover (10701-M722).
- 6 . Reassemble the parts in the reverse order.

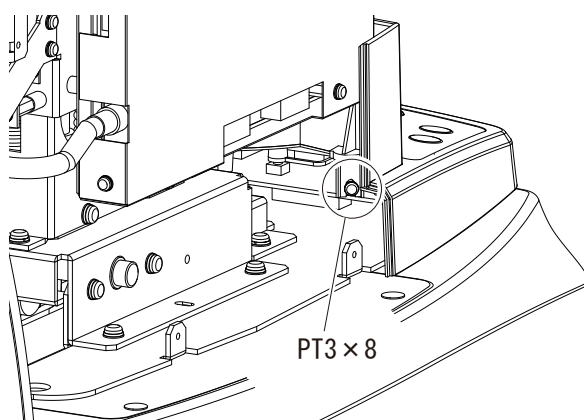


6.1.10 Brake cover (10701-M723)

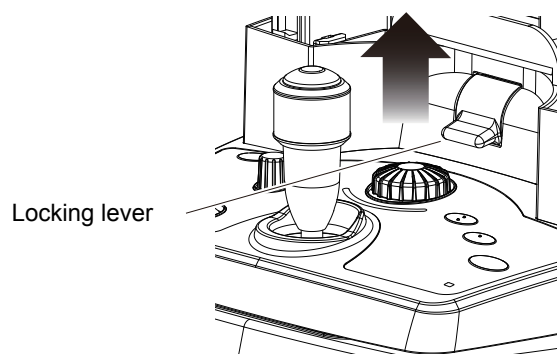
- 1 . Remove the body front cover (10701-M722) (see 6.1.9).
- 2 . Unscrew PT3 × 8.



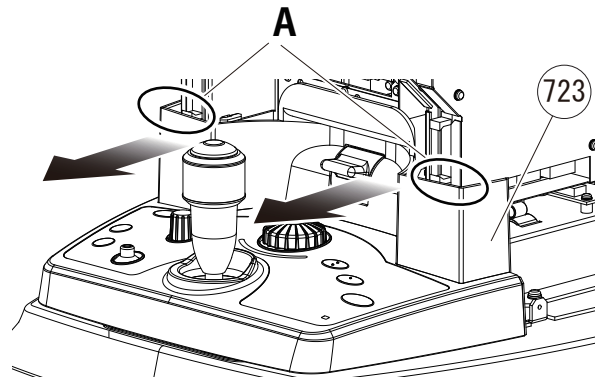
- 3 . Unscrew PT3 × 8.



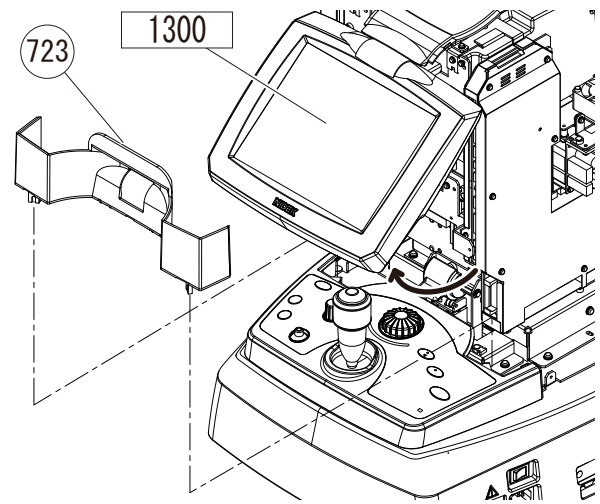
- 4 . Raise the locking lever.



- 5 . Tilt the LCD ASSY (10701-1300).
- 6 . Put your fingers on the A areas of the brake cover (10701-M723) and pull the cover toward you.
 - * The hooks of the brake cover (10701-M723) are released.



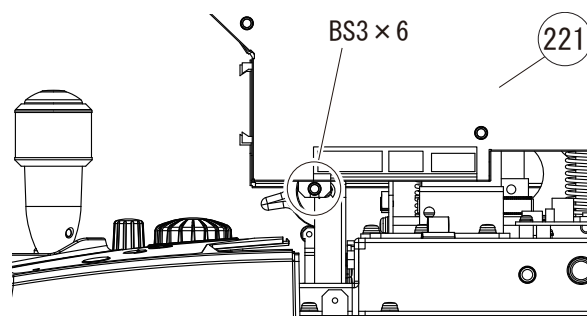
- 7 . Remove the LCD ASSY (10701-1300).
- 8 . Reassemble the parts in the reverse order.



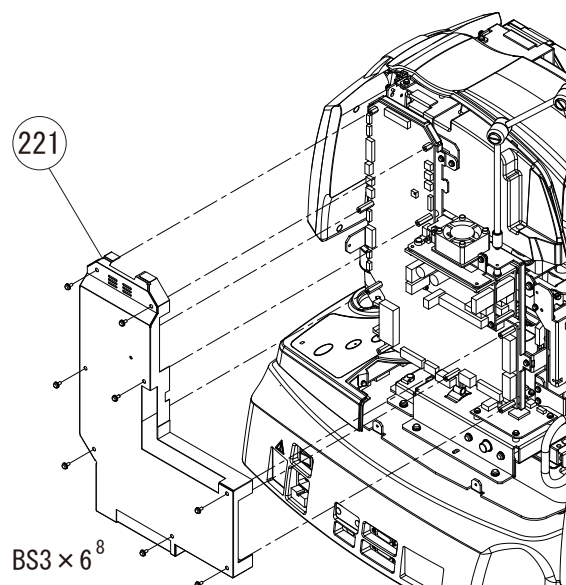
6.1.11 Removing board covers

6.1.11.1 Board cover (10701-M221)

- 1 . Remove the brake cover (10701-M723) (see 6.1.10).
- 2 . Loosen BS3 × 6.

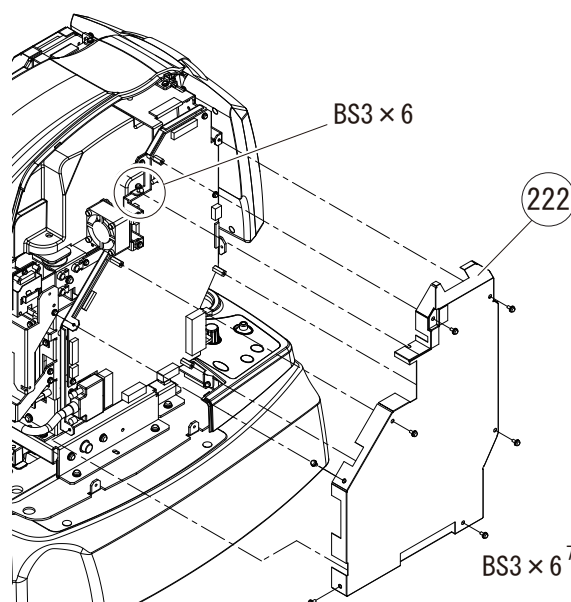


- 3 . Unscrew BS3 × 6 (n = 8) to remove the board cover (10701-M221).
- 4 . Reassemble the parts in the reverse order.



6.1.11.2 Board cover (10701-M222)

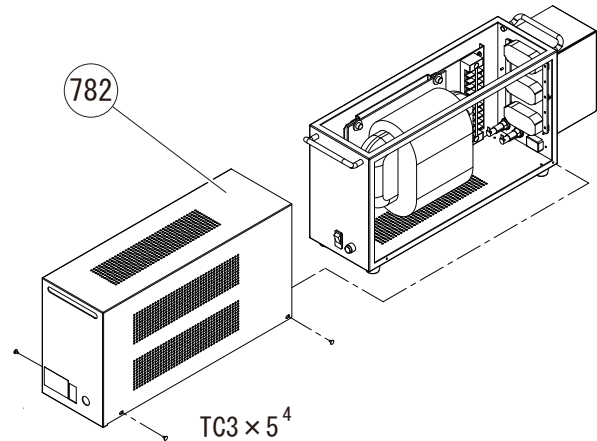
- 1 . Remove the brake cover (10701-M723) (see 6.1.10).
- 2 . Loosen BS3 × 6.
- 3 . Unscrew BS3 × 6 (n = 7) to remove the board cover (10701-M222).
- 4 . Reassemble the parts in the reverse order.



6.2 Removing Isolation Transformer Cover

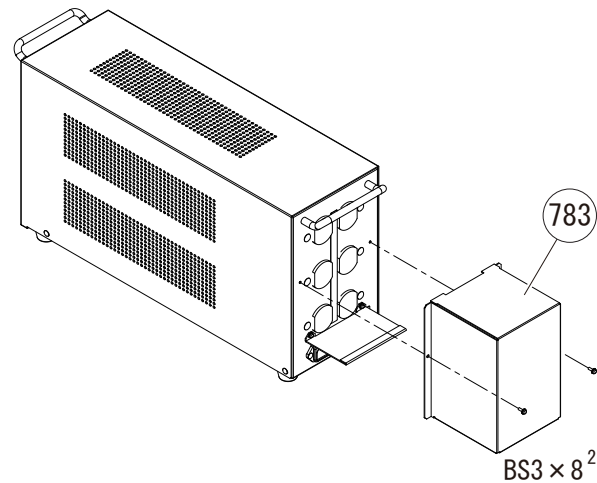
6.2.1 Cover (10701-M782)

- 1 . Unscrew TC3 × 5 (n = 4).
- 2 . Remove the cover (10701-M782).
- 3 . Reassemble the parts in the reverse order.



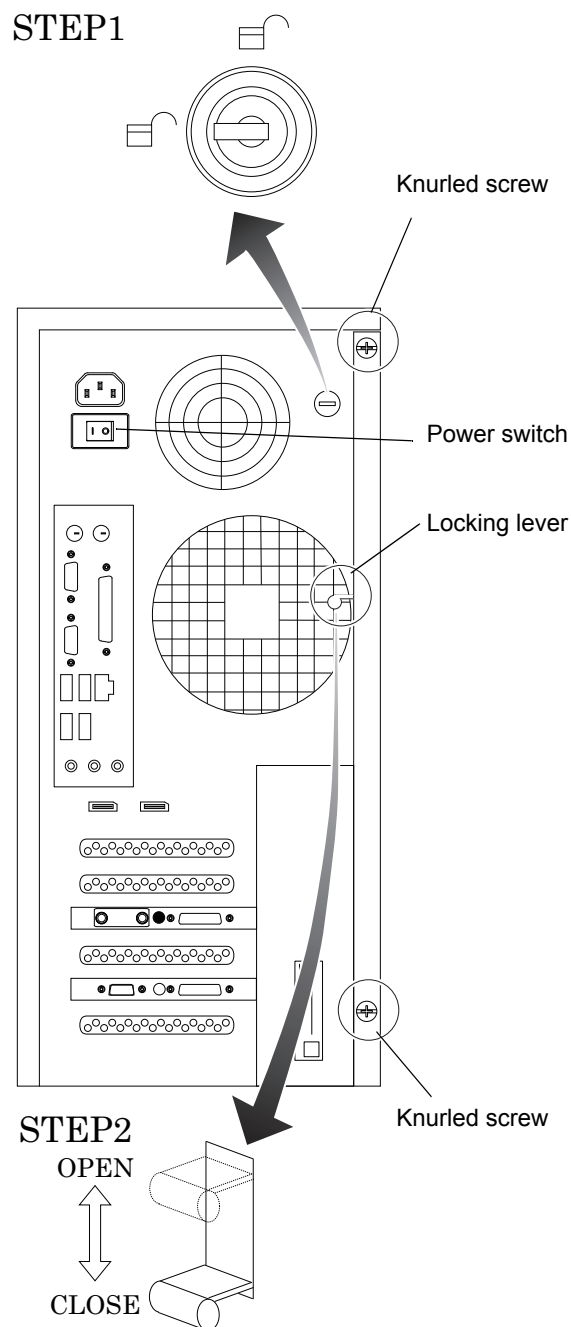
6.2.2 Power cord guard 1 (10701-M783)

- 1 . Unscrew BS3 × 8 (n = 2).
- 2 . Remove power cord guard 1 (10701-M783).
- 3 . Reassemble the parts in the reverse order.

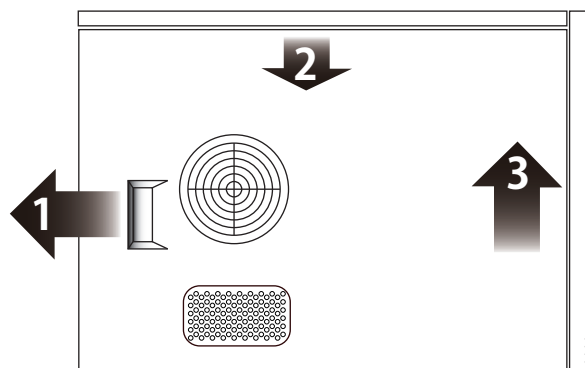


6.3 Removing PC Covers

- 1 . Turn off the power switch of the PC.
- 2 . Disconnect all cables from the PC (see 7.3.1).
- 3 . Unscrew the knurled screws (n = 2).
- 4 . Insert the key into the keyhole on the rear of the PC. Turn the key until it becomes horizontal.
- 5 . Slide up the locking lever on the keyhole side.



- 6 . Remove the PC side cover.
 - 1) Slide the PC side cover to the left.
 - 2) Pull the upper portion of the PC toward you.
 - 3) Lift the PC side cover.
- 7 . Reassemble the parts in the reverse order.



This page is intentionally left blank

7 REPLACEMENT PROCEDURE

7.1 Main Body

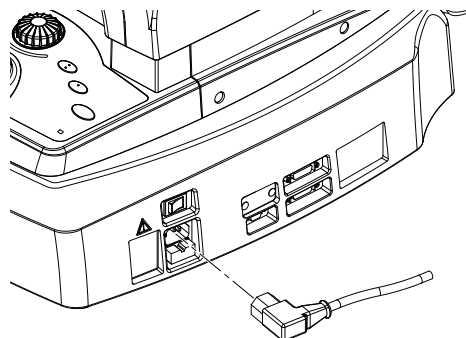
7.1.1 ASSYs

7.1.1.1 Main body

Replacement part: 10701-0021 (for USA)

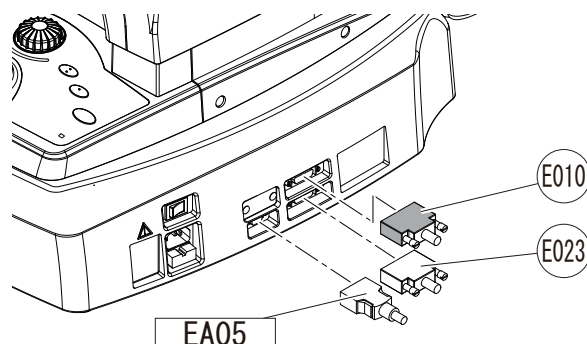
10701-0041 (for outside USA)

1 . Disconnect the power cord.



2 . Disconnect the following cables from the side of the main body.

- 1) CAPTRG cable (10701-EA05)
 - * White
- 2) Camera link cable (10701-E010)
 - * Black
- 3) Camera link cable (10701-E023)
 - * White

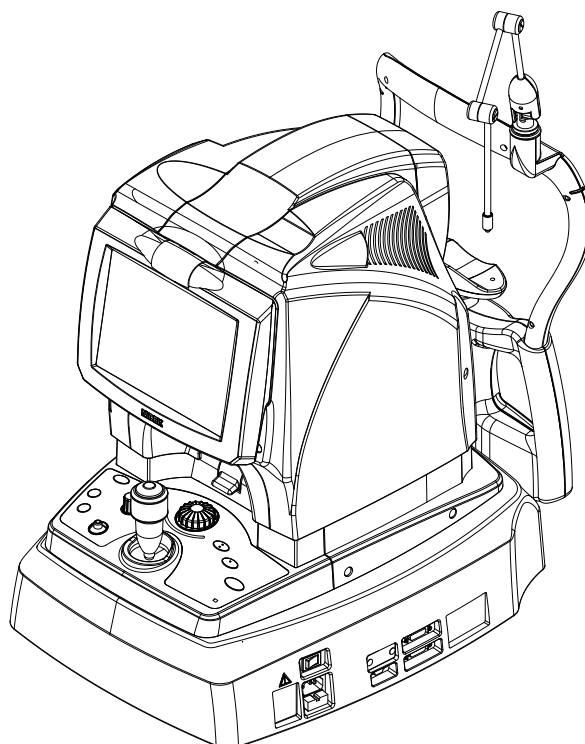


3 . Replace the main body.

- 1) For INC: 10701-0021
- 2) For outside Japan: 10701-0041

4 . Reconnect the cables in the reverse order.

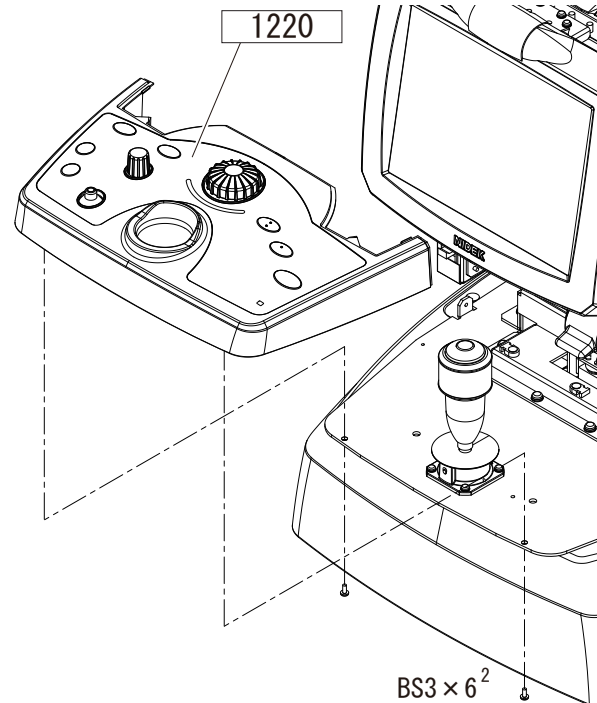
5 . Read the OCT calibration file corresponding to the serial number of the main body (see 8.4).



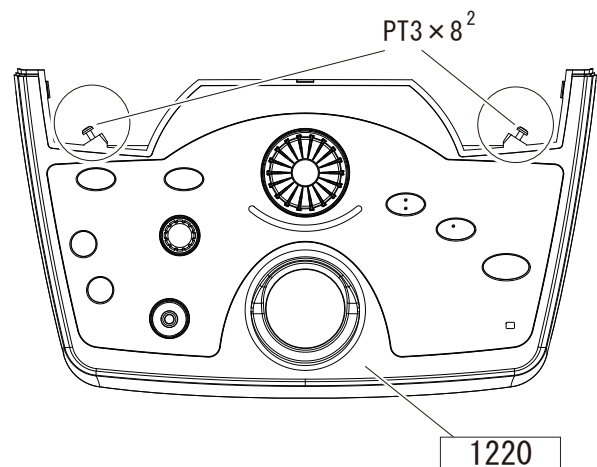
7.1.1.2 Operation panel ASSY (10701-1220)

Replacement part: 10701-1220

- 1 . Move the image capturing unit to the highest position.
- 2 . Remove the brake cover (10701-M723) (see 6.1.10).
- 3 . Disconnect J15 (P215) and J24 (P224) from the sub-control board (10701-BA02).
- 4 . Unscrew BS3 × 6 (n = 2) to remove the operation panel ASSY (10701-1220).
- 5 . Disconnect J3 (P303) from the switch board (10701-BA03).



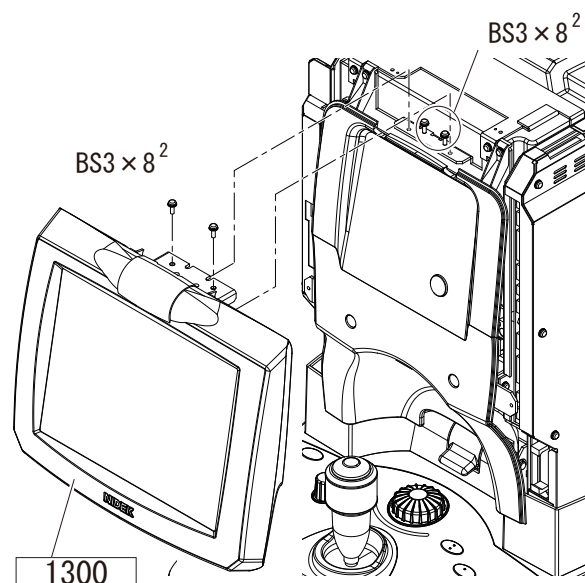
- 6 . Unscrew PT3 × 8 (n = 2).
- 7 . Replace the operation panel ASSY (10701-1220).
- 8 . Reassemble the parts in the reverse order.



7.1.1.3 LCD ASSY (10701-1300)

Replacement part: 10701-1300

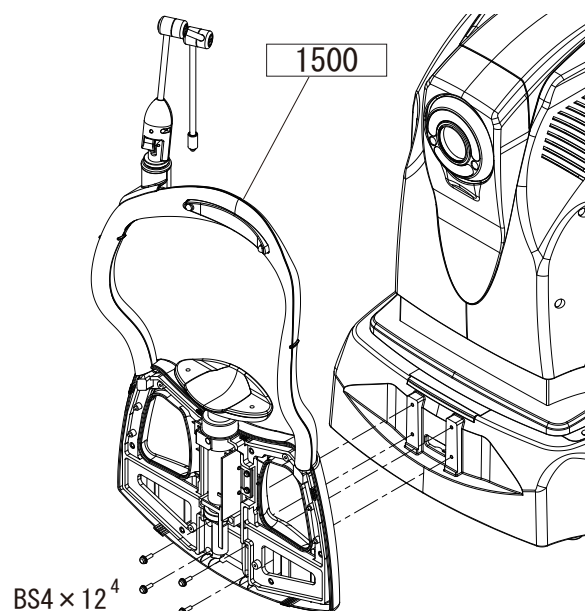
- 1 . Remove the top cover (10701-M702) (see 6.1.6).
- 2 . Disconnect J5 (P105) and J6 (P106) from the main board (10701-BA01).
- 3 . Loosen BS3 × 8 (n = 2).
- 4 . Unscrew BS3 × 8 (n = 2) to remove the LCD ASSY (10701-1300).
- 5 . Replace the LCD ASSY (10701-1300).
- 6 . Reassemble the parts in the reverse order.



7.1.1.4 Chinrest ASSY (10701-1500)

Replacement part: 10701-1500

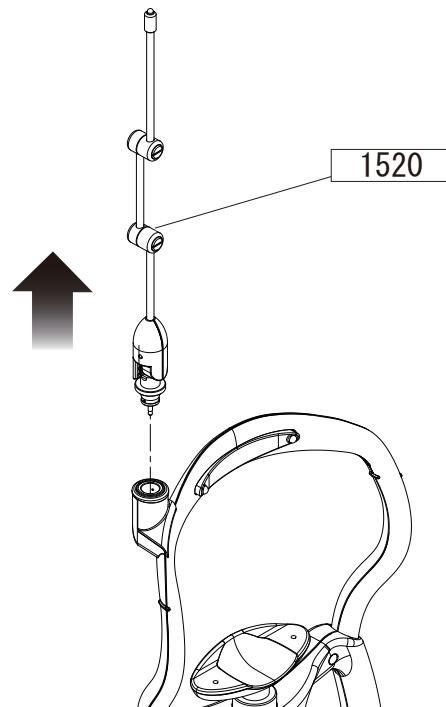
- 1 . Remove the chinrest ASSY front cover (10701-M502) (see 6.1.4).
- 2 . Unscrew BS4 × 12 (n = 4) to remove the chinrest ASSY (10701-1500).
- 3 . Replace the chinrest ASSY (10701-1500).
- 4 . Reassemble the parts in the reverse order.



7.1.1.5 External fixation target ASSY (10701-1520)

Replacement part: 10701-1520

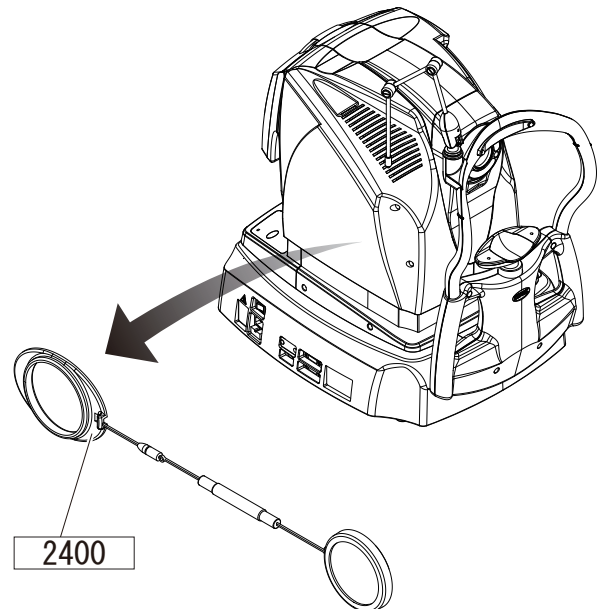
- 1 . Pull out the external fixation target ASSY (10701-1250).
- 2 . Replace the external fixation target ASSY (10701-1520) with a new one.



7.1.1.6 Lens cap ASSY (10701-2400)

Replacement part: 10701-2400

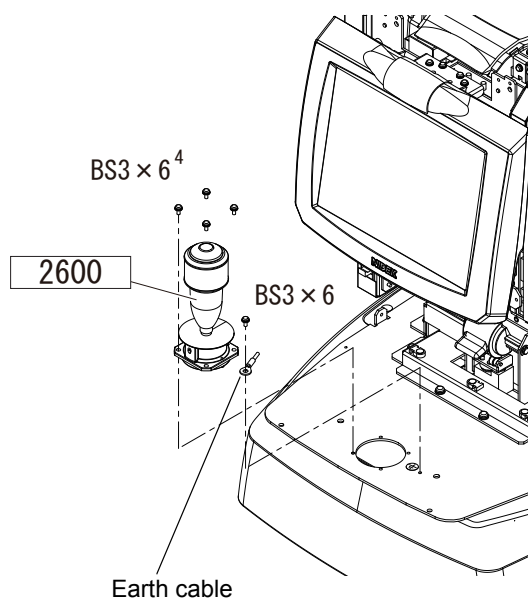
- 1 . Peel off the lens cap ASSY (10701-2400) from the main body.
- 2 . Replace the lens cap ASSY (10701-2400) with a new one.



7.1.1.7 Joystick ASSY (30601-2600)

Replacement part: 30601-2600

- 1 . Remove the operation panel ASSY (10701-1220) (see 7.1.1.2).
- 2 . Unscrew BS3 × 6 to disconnect the earth cable from the joystick ASSY (30601-2600).
- 3 . Unscrew BS3 × 6 (n = 4) to remove the joystick ASSY (30601-2600).
- 4 . Replace the joystick ASSY (30601-2600).
- 5 . Reassemble the parts in the reverse order.

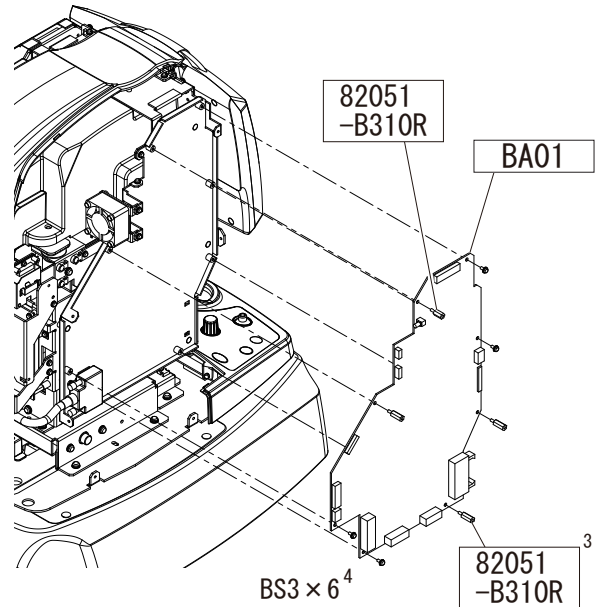


7.1.2 Boards

7.1.2.1 Main board (10701-BA01)

Replacement part: 10701-BA01

- 1 . Remove the board cover (10701-M222) (see 6.1.11.2).
- 2 . Disconnect all connectors from the main board (10701-BA01).
- 3 . Remove the following parts to remove the main board (10701-BA01).
 - 1) BS3 × 6 (n = 4)
 - 2) Male and female spacers (82051-B313R [n = 3])
 - 3) Male and female spacers (82051-B313R)
- 4 . Replace the main board (10701-BA01).
- 5 . Reassemble the parts in the reverse order.



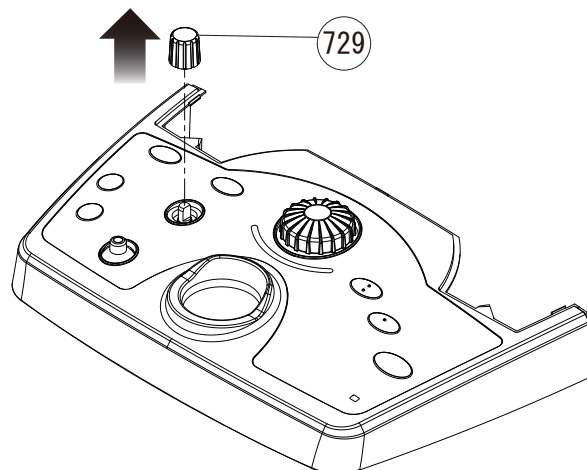
- 6 . Copy all EEPROM data in the sub-control board (10701-BA02) to the flash memory of the main board (10701-BA01).
 - 1) Perform EEPROM> FLASH BACKUP (see 8.1.1.5).

7.1.2.2 SW board (10701-BA03)

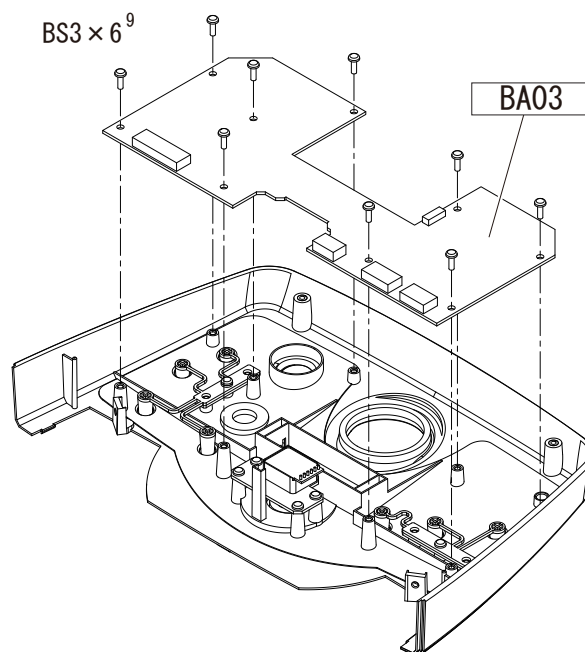
Replacement part: 10701-BA03

10701-M729

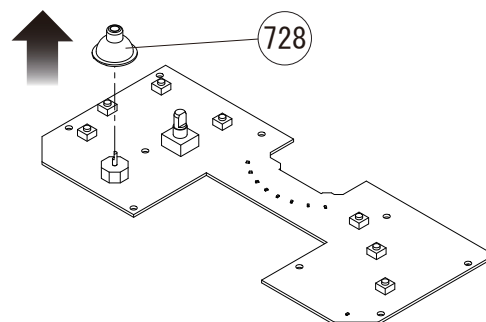
- 1 . Replace the operation panel ASSY (10701-1220) (see 7.1.1.2).
- 2 . Disconnect all connectors from the SW board (10701-BA03).
- 3 . Pull out the knob (10701-M729).



- 4 . Unscrew BS3 × 6 (n = 9) to remove the SW board (10701-BA03).



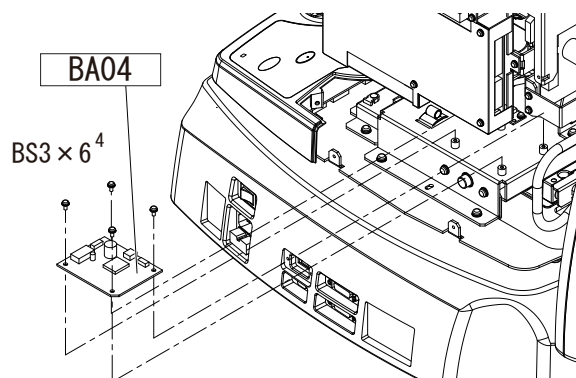
- 5 . Pull out the key top (10701-M728).
 - 6 . Replace the SW board (10701-BA03).
 - 7 . Reassemble the parts in the reverse order.
- * Replace the knob (10701-M729).



7.1.2.3 UDM DRV board (10701-BA04)

Replacement part: 10701-BA04

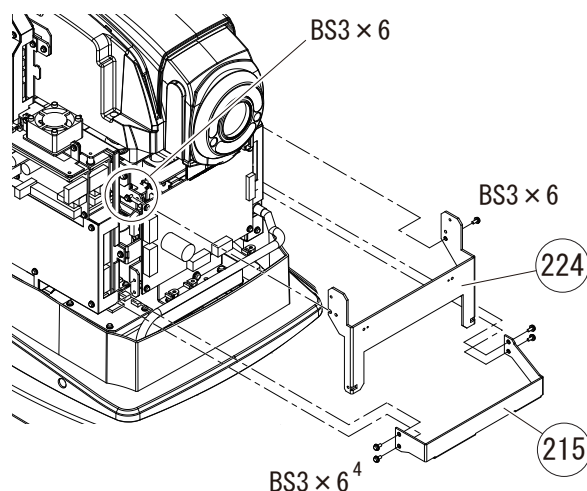
- 1 . Remove the body front cover (10701-M722) (see 6.1.9).
- 2 . Unscrew BS3 × 6 (n = 4) to remove the UDM DRV board (10701-BA04).
- 3 . Replace the UDM DRV board (10701-BA04).
- 4 . Reassemble the parts in the reverse order.



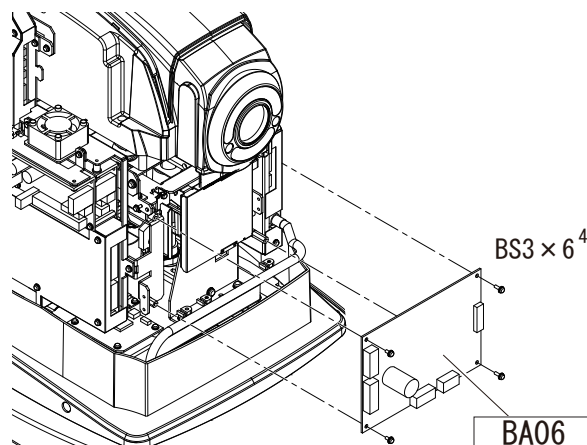
7.1.2.4 Power filter board (10701-BA06)

Replacement part: 10701-BA06

- 1 . Remove the front cover (10701-M701) (see 6.1.5).
- 2 . Loosen BS3 × 6.
- 3 . Unscrew BS3 × 6 to remove the bracket (10701-M224).
- 4 . Unscrew BS3 × 6 (n = 4) to remove the cover bracket (10701-M215).



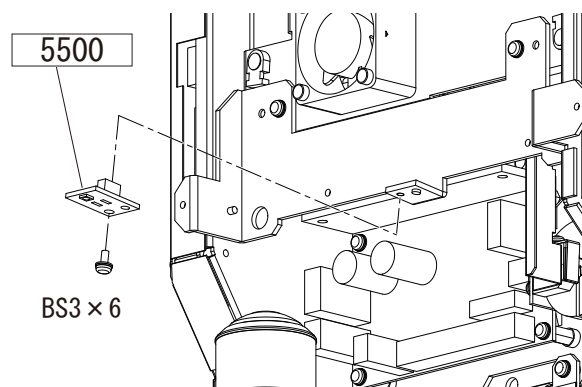
- 5 . Disconnect all connectors from the power filter board (10701-BA06).
- 6 . Unscrew BS3 × 6 (n = 4) to remove the power filter board (10701-BA06).
- 7 . Replace the power filter board (10701-BA06).
- 8 . Reassemble the parts in the reverse order.



7.1.2.5 Hand light board (10701-BA23)

Replacement part: 10701-BA23

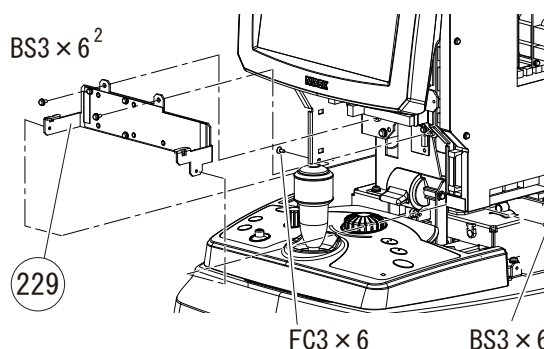
- 1 . Remove the rear cover ASSY (10701-2300) (see 6.1.2).
- 2 . Disconnect J1 from the hand light board (10701-BA23).
- 3 . Unscrew BS3 × 6 to remove the hand light board (10701-BA23).
- 4 . Replace the hand light board (10701-BA23).
- 5 . Reassemble the parts in the reverse order.



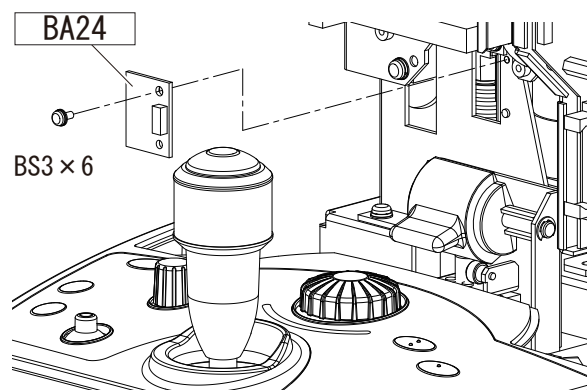
7.1.2.6 UD sensor board (10701-BA24)

Replacement part: 10701-BA24

- 1 . Remove the board cover (10701-M222) (see 6.1.11.2).
- 2 . Replace the main board (10701-BA01) (see 7.1.2.1).
- 3 . Unscrew FC3 × 6 and BS3 × 6 (n = 3) to remove the wiring bracket (10701-M224).



- 4 . Disconnect J1 from the UD sensor board (10701-BA24).
- 5 . Unscrew BS3 × 6 to remove the UD sensor board (10701-BA24).

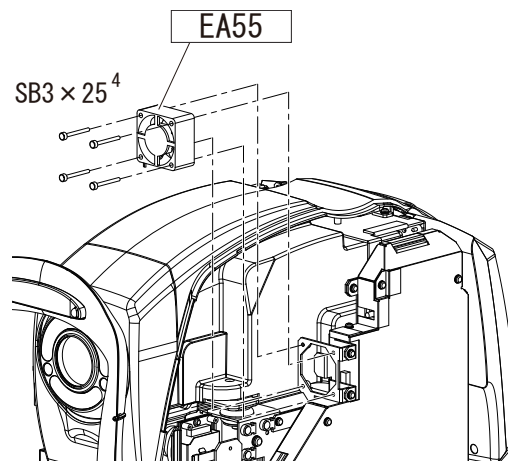


7.1.3 Electrical components

7.1.3.1 L. body fan cable (10701-EA55)

Replacement part: 10701-EA55

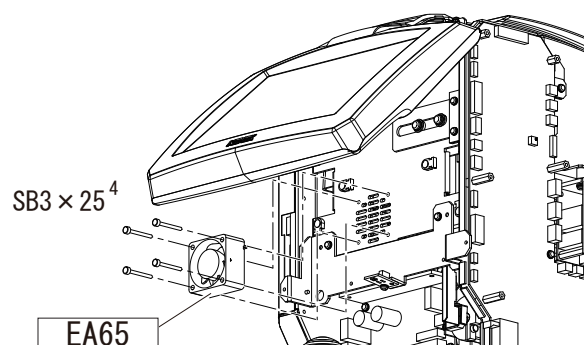
- 1 . Remove the board cover (10701-M221) (see 6.1.11.1).
- 2 . Disconnect J22 (P222) from the sub-control board (10701-BA02).
- 3 . Unscrew SB3 × 25 (n = 4) to remove the L. body fan cable (10701-EA55).
- 4 . Replace the L. body fan cable (10701-EA55).
- 5 . Reassemble the parts in the reverse order.



7.1.3.2 M. body fan cable (10701-EA65)

Replacement part: 10701-EA65

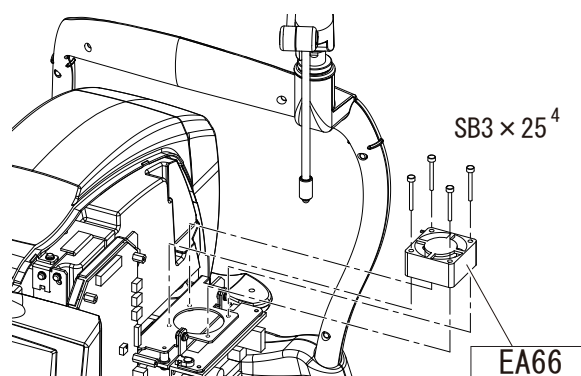
- 1 . Remove the board cover (10701-M221) (see 6.1.11.1).
- 2 . Disconnect J27 (P227) from the sub-control board (10701-BA02).
- 3 . Unscrew SB3 × 25 (n = 4) to remove the M. body fan cable (10701-EA65).
- 4 . Replace the M. body fan cable (10701-EA65).
- 5 . Reassemble the parts in the reverse order.



7.1.3.3 R. body fan cable (10701-EA66)

Replacement part: 10701-EA66

- 1 . Remove the board cover (10701-M221) (see 6.1.11.1).
- 2 . Disconnect J28 (P228) from the sub-control board (10701-BA02).
- 3 . Unscrew SB3 × 25 (n = 4) to remove the R. body fan cable (10701-EA66).
- 4 . Replace the R. body fan cable (10701-EA66).
- 5 . Reassemble the parts in the reverse order.



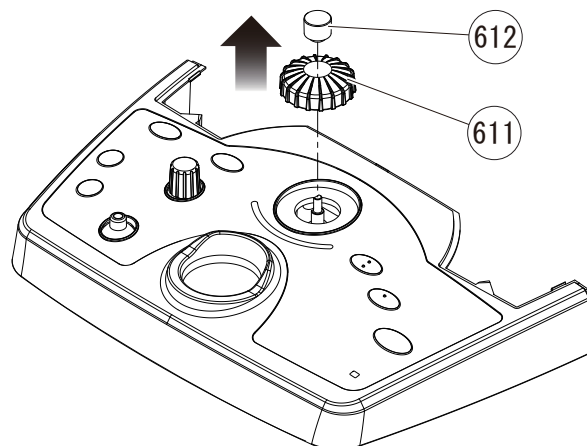
7.1.3.4 Rotary encoder

Replacement part: 34085-E202

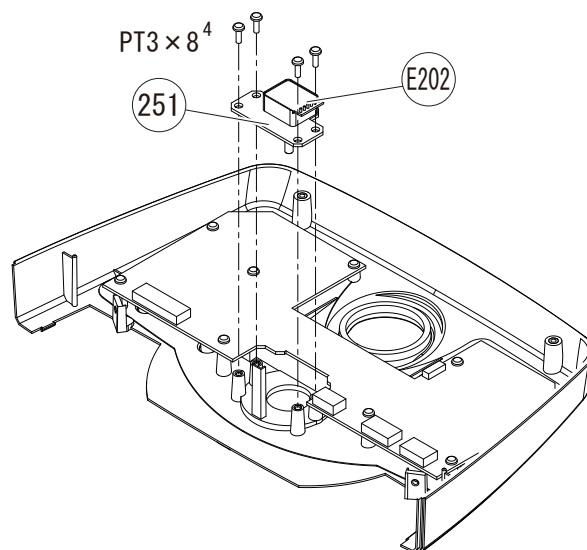
15401-M611

15401-M612

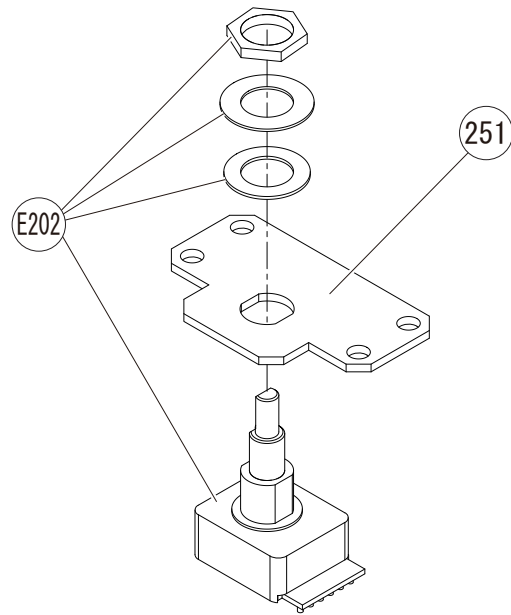
- 1 . Remove the operation panel ASSY (10701-1220) (see 7.1.1.2).
- 2 . Disconnect J4 (P304) from the SW board (10701-BA03).
- 3 . Pull out knob 1 (15401-M611) and switch 1 (15401-M612).



- 4 . Unscrew PT3 × 8 (n = 4) to remove the rotary encoder (34085-E202) along with the switch bracket (10701-M251).



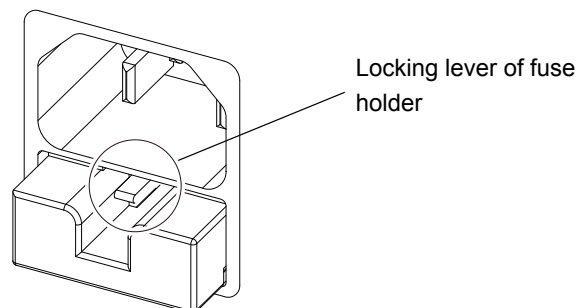
- 5 . Remove the supplied nut, washers (n = 2), and switch bracket (10701-M251) from the rotary encoder (34085-E202).
- 6 . Replace the rotary encoder (34085-E202).
- 7 . Replace the parts in the reverse order.
 - * Replace the following parts.
 - 1) Knob 1 (15401-M611)
 - 2) Switch 1 (15401-M612)



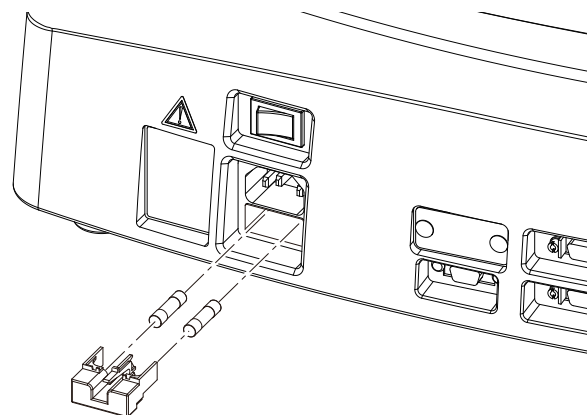
7.1.3.5 Fuses of main body

Replacement part: 80402-02121

- 1 . Turn off power to the main body. Disconnect the power cord from the inlet.
- 2 . Press down the locking lever of the fuse holder to remove the fuses along with the holder.



- 3 . Pull out the time-lag fuses (80402-02121) from the fuse holder.
- 4 . Replace the time-lag fuses (80402-02121).
- 5 . Reassemble the parts in the reverse order.

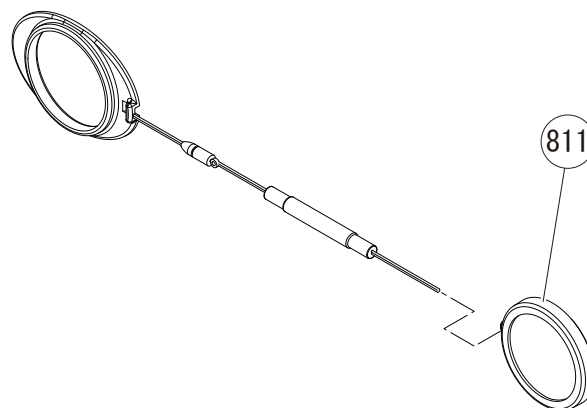


7.1.4 Other parts

7.1.4.1 Lens cap (15401-M811)

Replacement part: 15401-M811

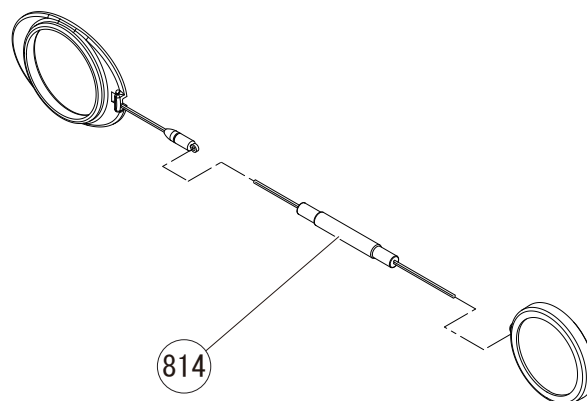
- 1 . Remove the lens cap (15401-M811).
- 2 . Replace the lens cap (15401-M811) with a new one.



7.1.4.2 Coil cord (15401-M814)

Replacement part: 15401-M814

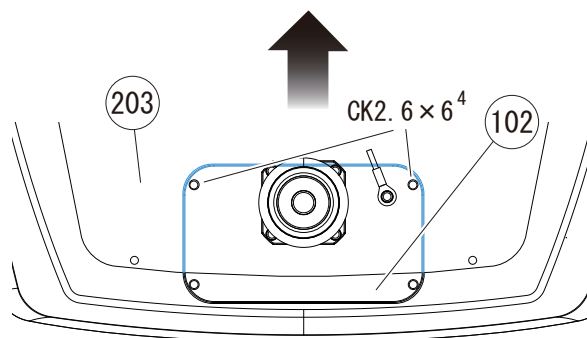
- 1 . Disconnect the coil cord (15401-M814).
- 2 . Replace the coil cord (15401-M814) with a new one.



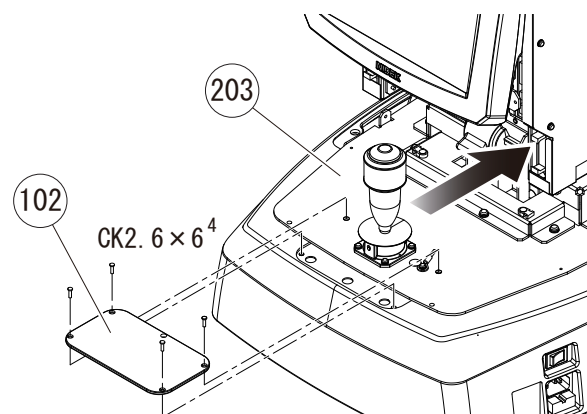
7.1.4.3 Sliding plate (32105-M102)

Replacement part: 32105-M102

- 1 . Replace the operation panel ASSY (10701-1220) (see 7.1.1.2).
- 2 . Move the image capturing unit toward the subject.
- 3 . Unscrew CK2.6 × 6 (n = 2) through the holes of the sliding base (10701-M203).
- 4 . Unscrew CK2.6 × 6 (n = 2).



- 5 . Remove the sliding plate (32105-M102).
- 6 . Replace the sliding plate (32105-M102).
- 7 . Reassemble the parts in the reverse order.

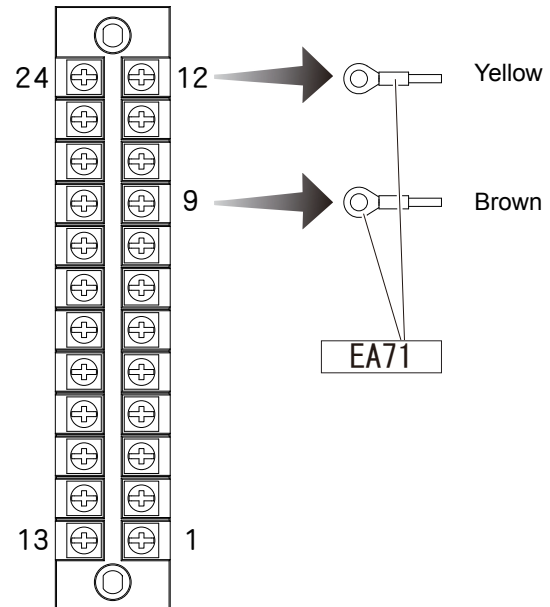


7.2 Isolation Transformer

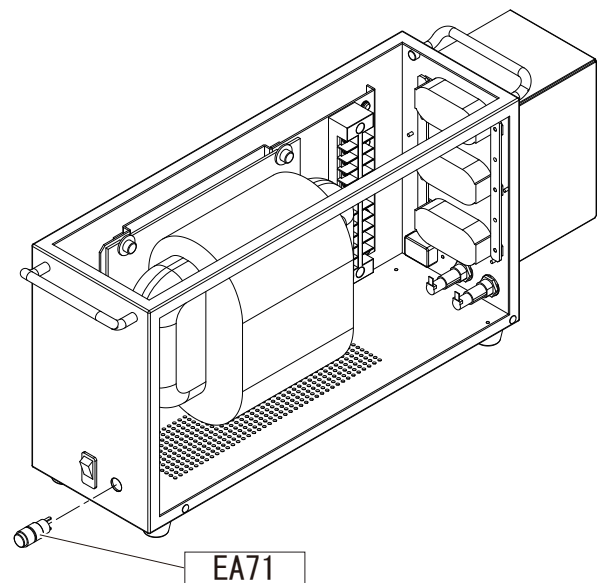
7.2.1 Indicator cable (10701-EA71)

Replacement part: 10701-EA71

- 1 . Remove the cover (10701-M782) (see 6.2.1).
- 2 . Unscrew the 9th and 12th square washer screws (n = 2) from the terminal block (55732-E060).



- 3 . Remove the indicator cable (10701-EA71).
- 4 . Replace the indicator cable (10701-EA71).
- 5 . Reassemble the parts in the reverse order.

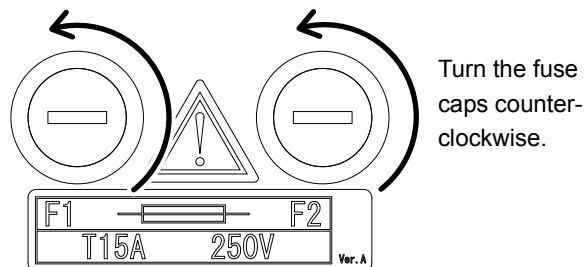


7.2.2 Fuses of isolation transformer

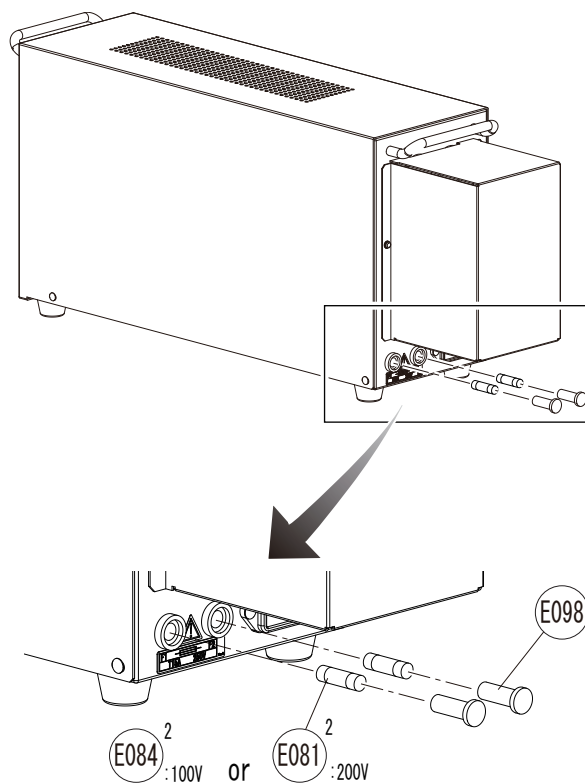
Replacement part: 36570-E084 (for 100 V)

36570-E081 (for 200 V)

- 1 . Turn off power to the isolation transformer.
- 2 . Turn the fuse caps (36570-E098) counter-clockwise.



- 3 . Remove the time-lag fuses along with the fuse caps (36570-E098).
- 4 . Pull out the time-lag fuses from the fuse caps (36570-E098).
- 5 . Replace the time-lag fuses.
 - 1) 100 V: 36570-E084
 - 2) 200 V: 36570-E081
- 6 . Reassemble the parts in the reverse order.



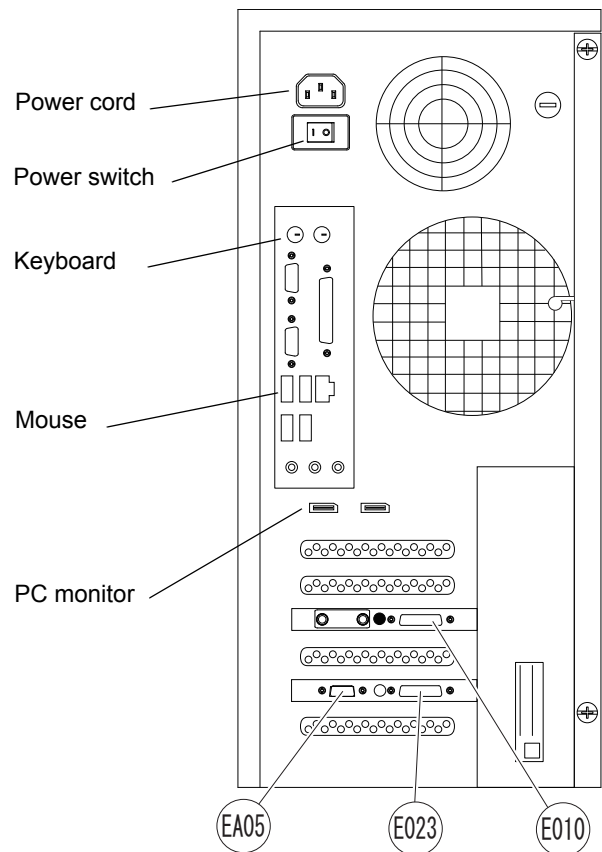
7.3 PC

7.3.1 PC ASSY

Replacement part: 10701-4200 (English OS)

- 1 . Back up the data saved in the PC.
- 2 . Turn off the power switch of the isolation transformer.
- 3 . Turn off the power switch of the PC.
- 4 . Disconnect all cables from the PC.

- 1) Power cord
- 2) Keyboard
- 3) Mouse
- 4) Signal cable of the PC monitor (10701-E013)
- 5) CAPTRG cable (10701-EA05)
 - * White
- 6) Camera link cable (10701-E010)
 - * Black
- 7) Camera link cable (10701-E023)
 - * White

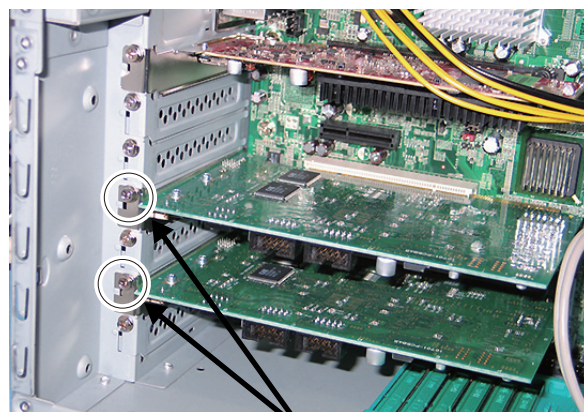


- 5 . Replace the PC ASSY (English OS [10701-4200]).
- 6 . Reconnect all cables in the reverse order.
- 7 . Load the OCT calibration file corresponding to the serial number of the main body (see 8.4).
- 8 . Set the date and time (see 8.8.2).
- 9 . Set the time zone (see 8.8.3).

7.3.2 Capture board (10701-BA20)

Replacement part: 10701-BA20

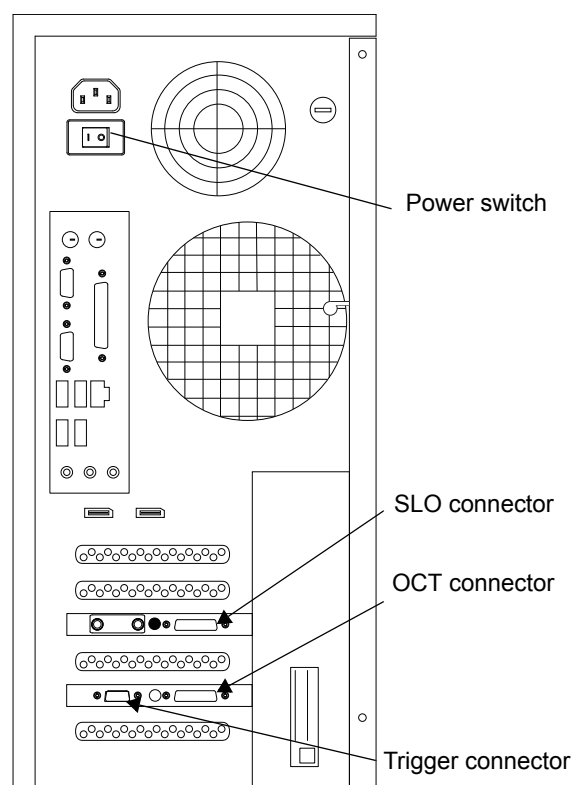
- 1 . Turn off the power switch of the isolation transformer.
- 2 . Turn off the power switch of the PC.
- 3 . Disconnect all cables from the PC (see 7.3.1).
- 4 . Remove the PC cover (see 6.3).
- 5 . Remove the screws fastening the capture board (10701-BA20).



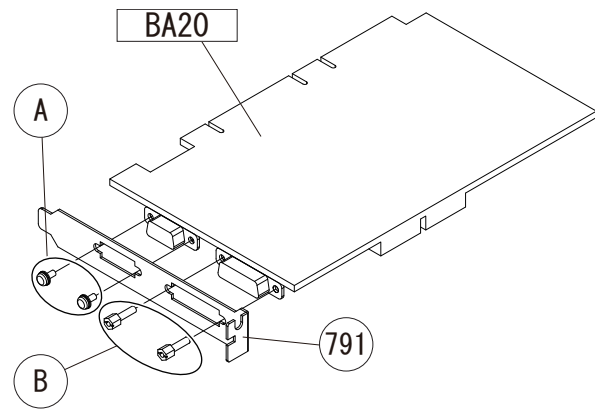
Screws

- 6 . Remove the capture board (10701-BA20) along with the front panel (10701-M791) from the PCI connector of the PC.

- 1) Upper board: for SLO
- 2) Lower board: for OCT



- 7 . Remove supplied screws A (n = 2) and B (n = 2) from the capture board (10701-BA20) to remove the front panel (10701-M791).
- 8 . Replace the capture board (10701-BA20).
- 9 . Set SWs on the capture board (10701-BA20) (see 8.3.1).
10. Reassemble the parts in the reverse order.



7.3.3 PC monitor (10701-E013)

Replacement part: 10701-E013

- 1 . Remove power cord guard 1 (10701-M783) (see 6.2.2).
- 2 . Disconnect the power cord of the PC monitor (10701-E013) from the isolation transformer.
- 3 . Disconnect the signal cable of the PC monitor (10701-E013) from the PC (see 7.3.1).
- 4 . Replace the PC monitor (10701-E013).
- 5 . Reconnect the cables in the reverse order.

7.3.4 Keyboard

Replacement part: 32164-E081

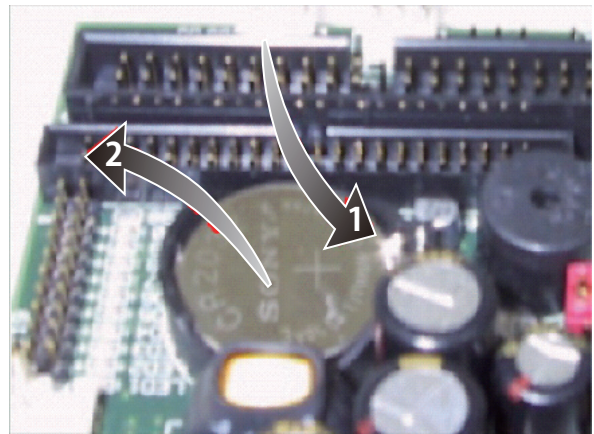
- 1 . Disconnect the keyboard from the PC (see 7.3.1).
- 2 . Replace the keyboard (English mini keyboard [32164-E081]) with a new one.

7.3.5 Coin-shaped lithium battery (10701-E100)

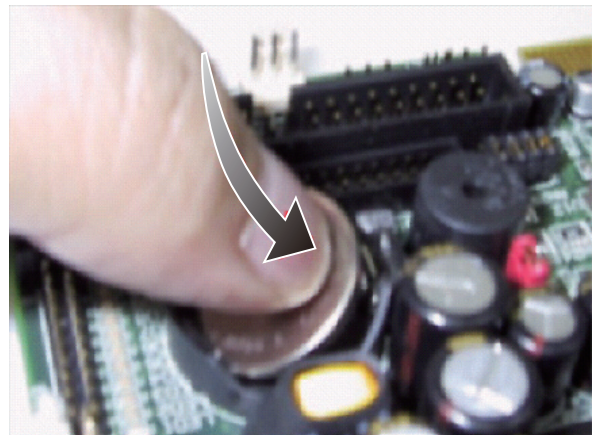
Replacement part: 10701-E100

- * Replace the battery with the specified one.
- * If the battery is replaced with an improper one, an explosion may occur.
- * If the battery is used after its validity date has expired, the system may not operate properly.
Validity date 5 years (ambient temperature: 40°C or less)
- * Never do the following:
Charging, a short between positive and negative terminals, inserting the battery reversed
- * When the PC battery is replaced, the internal clock date and time is cleared.

- 1 . Remove the PC cover (see 6.3).
- 2 . Remove the graphic board (10701-E103) (see 7.3.8).
- 3 . Press against the metal clip to remove the coin-shaped lithium battery (10701-E100).
- 4 . Replace the coin-shaped lithium battery (10701-E100).



- 5 . Reassemble the parts in the reverse order.
 - * Attach the lithium battery (10701-E100) by pressing it.
- 6 . Perform the BIOS setting (see 8.8.1).
- 7 . Check the date and time setting (see 8.8.2).
- 8 . Check the time zone setting (see 8.8.3).



7.3.6 Memory module (10701-E101)

Replacement part: 10701-E101

- * Never do the following:

Touching the terminals or memory chip by fingers or making them dirty

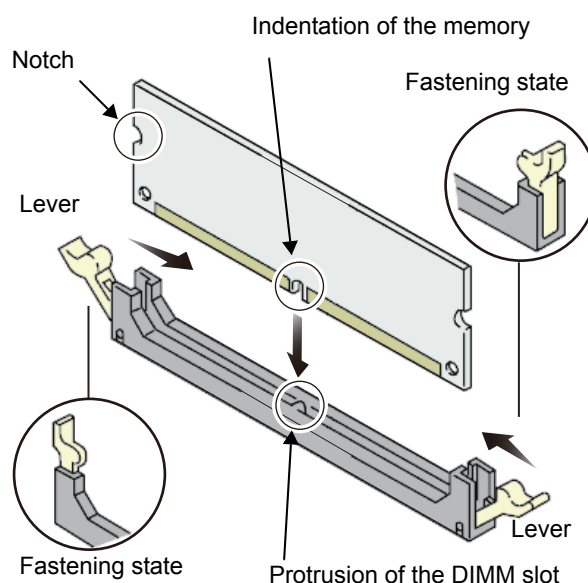
Handling or storing the memory module where static electricity is prone to generate

Attaching the memory module reversed or at an angle

- 1 . Remove the PC cover (see 6.3).
- 2 . Open slowly the levers on both ends of the DIMM slot to remove the memory module (10701-E101).

- * Take proper care so that the memory module (10701-E101) does not bounce out.

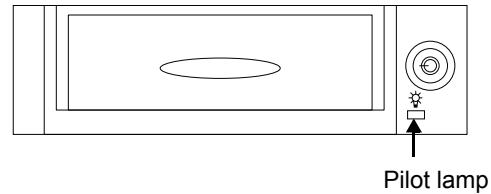
- 3 . Replace the memory module (10701-E101).
- 4 . Open the levers of the DIMM slot, then align the indentation of the memory module (10701-E101) with the protrusion of the DIMM slot.
- 5 . Confirm the alignment and insert the memory module (10701-E101) securely so that it will be fastened with the levers.
- 6 . Confirm that the DIMM slot levers fit into the notches of the memory module (10701-E101) and they are fastened.
- 7 . Attach the PC cover.
- 8 . Turn off power to the PC. Confirm that the memory count value displayed on the screen is correct.



7.3.7 System disk (10701-E102)

Replacement part: 10701-E102

- 1 . Turn off power to the PC.
- 2 . Confirm that the pilot lamp of the system disk (10701-E102) goes out.
- 3 . Remove the system disk (10701-E102).
 - 1) Insert the provided key into the key switch and turn it counterclockwise.
 - 2) Hold the handle of the system disk (10701-E102) and pull it out.
- 4 . Replace the system disk (10701-E102).
- 5 . Attach the system disk (10701-E102).
 - 1) Insert the system disk (10701-E102) into the PC.
 - 2) Insert the provided key into the key switch and turn it clockwise.
- 6 . Confirm that the key switch is locked.
- 7 . Load the OCT calibration file corresponding to the serial number of the main body (see 8.4).
- 8 . Check the date and time setting (see 8.8.2).
- 9 . Check the time zone setting (see 8.8.3).



7.3.8 Graphic board (10701-E103)

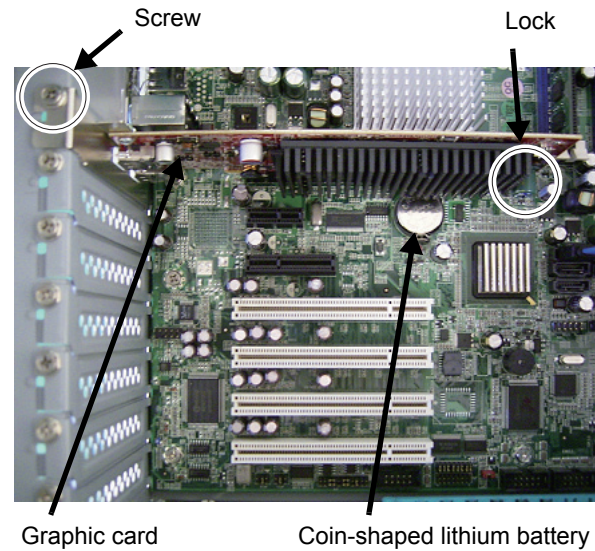
Replacement part: 10701-E103

* Never do the following:

Touching the terminals or board surface by fingers or making them dirty

Handling or storing the graphic board where static electricity is prone to generate

- 1 . Remove the PC cover (see 6.3).
- 2 . Remove the screw and lock to remove the graphic board (10701-E103).
- 3 . Replace the graphic board (10701-E103).
- 4 . Reassemble the parts in the reverse order.

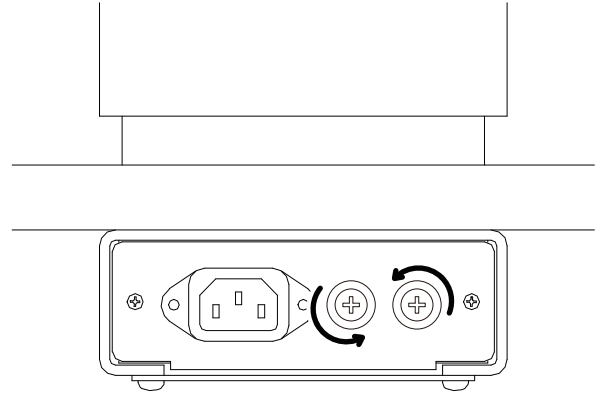


7.4 Motorized Optical Table

7.4.1 Fuses of motorized optical table

Replacement part: 10730-M117

- 1 . Turn off power to the motorized optical table.
- 2 . Turn the fuse caps counterclockwise.
- 3 . Remove the fuses along with the fuse caps.
- 4 . Pull out the fuses from the fuse caps.
- 5 . Replace the fuses (10730-M117).
- 6 . Reassemble the parts in the reverse order.



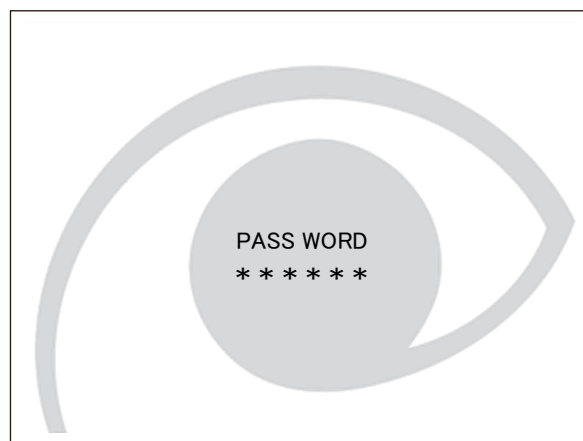
8 ADJUSTMENT

8.1 Mode

8.1.1 Service mode

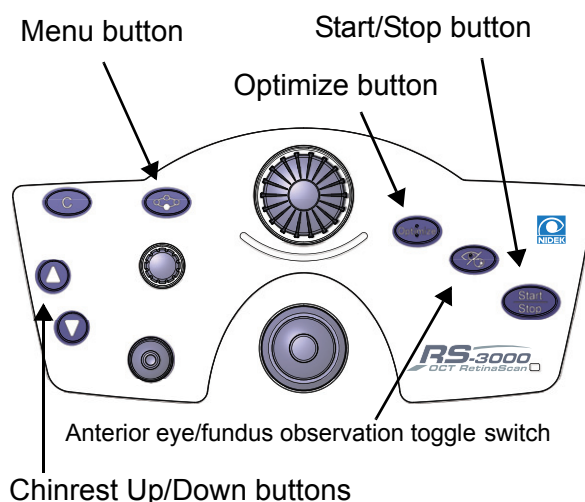
8.1.1.1 Activating service mode

- 1 . Turn on the power switch while pressing the Menu button and Start/Stop button.
 - * Press and hold the buttons until a beep sounds.
- 2 . Enter the password on the PASS WORD screen.



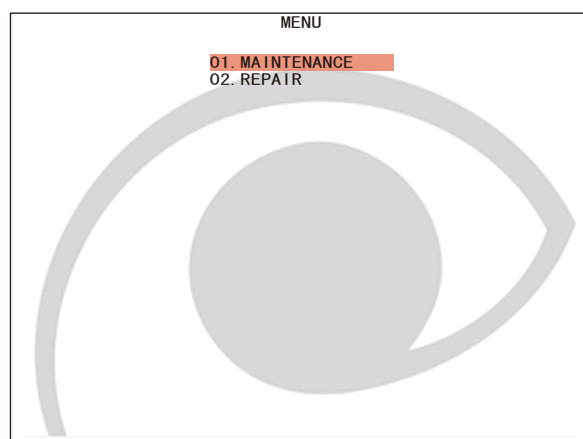
- * Enter the password with the operation panel in the following order.

- 1) Optimize button
- 2) Chinrest Up button
- 3) Start/Stop button
- 4) Start/Stop button
- 5) Anterior eye/fundus observation toggle switch
- 6) Chinrest Down button



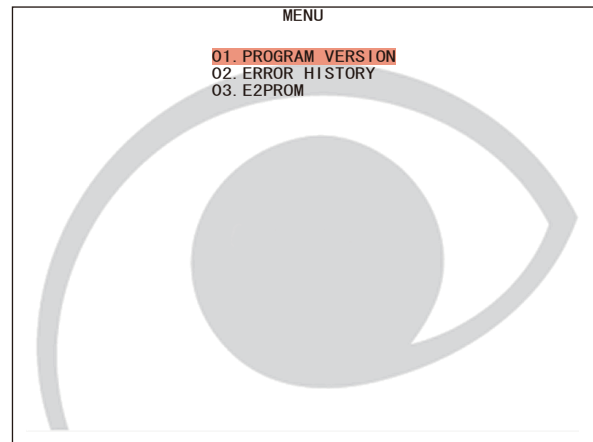
- 3 . The service mode is activated.

- 1) Move the Pointing stick forward or backward to select the desired item.
- 2) Press the center of the Pointing stick to determine it.



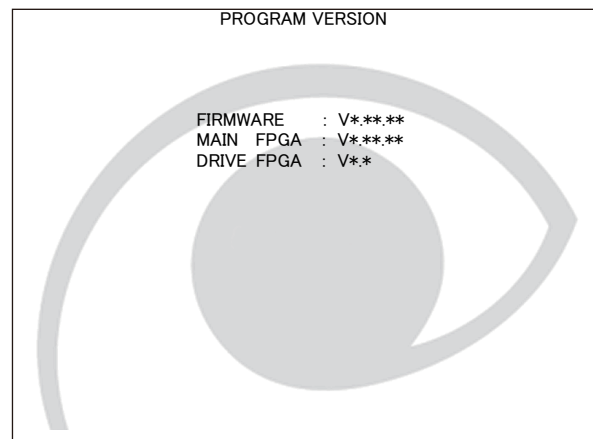
8.1.1.2 MAINTENANCE mode

- 1 . Activate the service mode (see 8.1.1.1).
- 2 . Move the Pointing stick forward or backward to select MAINTENANCE.
- 3 . Press the center of the Pointing stick to determine it.
- 4 . The MAINTENANCE mode menu is displayed.



8.1.1.3 PROGRAM VERSION

- 1 . Activate the MAINTENANCE mode (see 8.1.1.2).
- 2 . Move the Pointing stick forward or backward to select PROGRAM VERSION.
- 3 . Press the center of the Pointing stick to determine it.
- 4 . Check the detail of the program version.



8.1.1.4 ERROR HISTORY

- 1 . Activate the MAINTENANCE mode (see 8.1.1.2).
- 2 . Move the Pointing stick forward or backward to select ERROR HISTORY.
- 3 . Press the center of the Pointing stick to determine it.
- 4 . Check the error history during the use of the device.

ERROR HISTORY		
Clear a fix switch pushing.		
ERROR:001	EEPROM data	0
ERROR:002	Connection with PC software	0
ERROR:003	Optical axis adjustment	0
ERROR:004	Body cover open	0
ERROR:005	Body cover DIP switch	0
ERROR:006	Base cover	0
ERROR:007	Base DIP switch	0
ERROR:008	LCD Backlight	0
ERROR:011	Spectrometer motor overrun	0
ERROR:012	Spectrometer motor stop	0
ERROR:013	OPL motor overrun	0
ERROR:014	OPL motor stop	0
ERROR:015	Focus motor overrun	0
ERROR:016	Focus motor stop	0
ERROR:017	Chin-rest motor	0
ERROR:018	Up/Down motor	0
ERROR:021	OCT X galvano driver	0
ERROR:022	OCT Y galvano driver	0
ERROR:023	OCT galvano mirror	0
ERROR:024	OCT SLD	0
ERROR:025	OCT shutter	0
ERROR:026	SLD initialization	0
ERROR:027	SLD power over	0
ERROR:028	Timing of SLD and LD	0
ERROR:029	OCT galvano synchronization	0
ERROR:031	SLD galvano driver	0
ERROR:032	SLD galvano mirror	0
ERROR:033	SLD polygon mirror	0
ERROR:034	SLD polygon sensor	0
ERROR:035	SLD LD	0
ERROR:036	FIX LD	0
ERROR:037	SLD shutter	0

* Clearing ERROR HISTORY

- 1) Press the center of the Pointing stick.
- 2) Move the Pointing stick to the left to select YES.
- 3) Press the center of the Pointing stick to clear ERROR HISTORY.

ERROR HISTORY		
May I Clear ?		
YES/NO		
ERROR:001	EEPROM data	0
ERROR:002	Connection with PC software	0
ERROR:003	Optical axis adjustment	0
ERROR:004	Body cover open	0
ERROR:005	Body cover DIP switch	0
ERROR:006	Base cover	0
ERROR:007	Base DIP switch	0
ERROR:008	LCD Backlight	0
ERROR:011	Spectrometer motor overrun	0
ERROR:012	Spectrometer motor stop	0
ERROR:013	OPL motor overrun	0
ERROR:014	OPL motor stop	0
ERROR:015	Focus motor overrun	0
ERROR:016	Focus motor stop	0
ERROR:017	Chin-rest motor	0
ERROR:018	Up/Down motor	0
ERROR:021	OCT X galvano driver	0
ERROR:022	OCT Y galvano driver	0
ERROR:023	OCT galvano mirror	0
ERROR:024	OCT SLD	0
ERROR:025	OCT shutter	0
ERROR:026	SLD initialization	0
ERROR:027	SLD power over	0
ERROR:028	Timing of SLD and LD	0
ERROR:029	OCT galvano synchronization	0
ERROR:031	SLD galvano driver	0
ERROR:032	SLD galvano mirror	0
ERROR:033	SLD polygon mirror	0
ERROR:034	SLD polygon sensor	0
ERROR:035	SLD LD	0
ERROR:036	FIX LD	0
ERROR:037	SLD shutter	0

8.1.1.5 E2PROM

- 1 . Activate the MAINTENANCE mode (see 8.1.1.2).
- 2 . Move the Pointing stick forward or backward to select E2PROM.
- 3 . Press the center of the Pointing stick to determine it.
- 4 . Move the Pointing stick forward or backward to select the desired item.

1) EEPROM > FLASH BACKUP

- * All data in the EEPROM (BA02) is copied to the flash memory (on BA01).

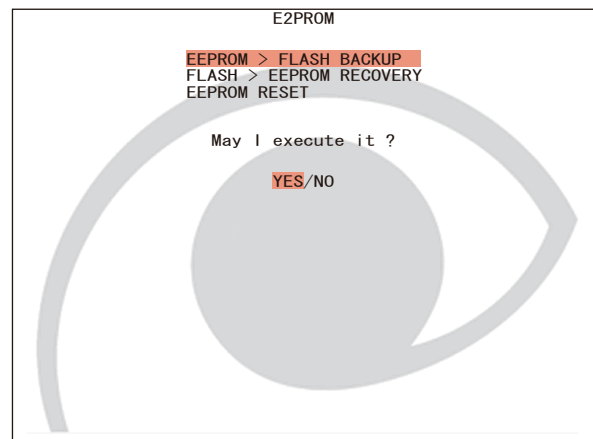
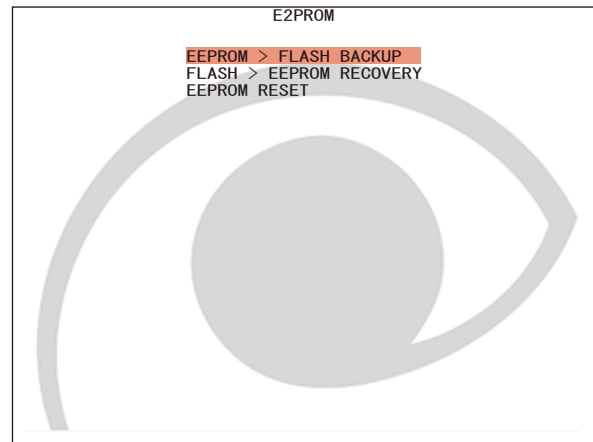
2) FLASH > EEPROM RECOVER

- * The data copied in the flash memory (on BA01) is copied to the EEPROM (on BA02).

3) EEPROM RESET

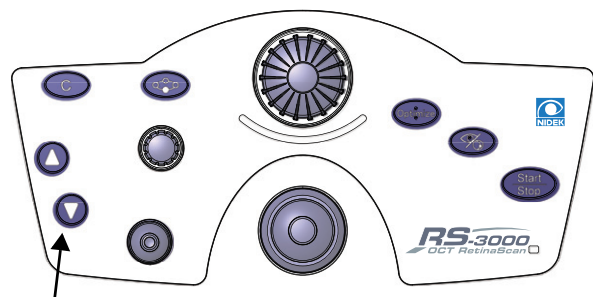
- * All data in the EEPROM (on BA02) is reset to the default values.

- 5 . Press the center of the Pointing stick to determine it.
- 6 . Move the Pointing stick to the left to select YES.
- 7 . Press the center of the Pointing stick to execute it.



8.1.2 Packing mode

- 1 . While pressing the Chinrest Down button, turn on the power switch.
- 2 . The image capturing unit and chinrest stop at the lowest position.



Chinrest Down button

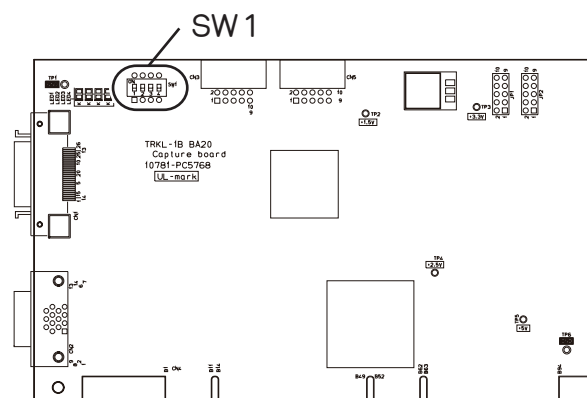
8.2 Checking Anterior Eye Illumination

- 1 . Start the device.
- 2 . Hold the IR sensor card TW (10670-M113) to the Anterior eye illumination.
- 3 . When the Anterior eye illumination is lit, the IR sensor card TW emits orange light.

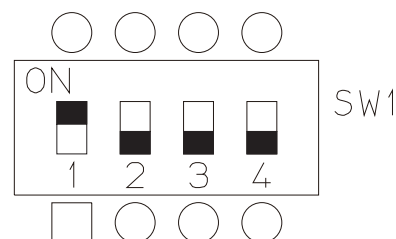
8.3 Setting Boards

8.3.1 Capture board (10701-BA20)

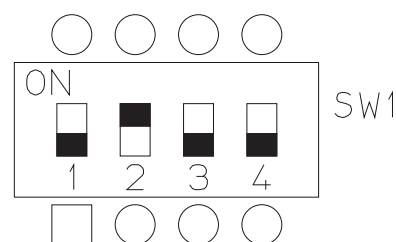
- 1 . Set SW1 on the capture board (10701-BA20).



- 1) For SLO capture
 - a . SW1-1 ON
 - b . SW1-2 OFF
 - c . SW1-3 OFF
 - d . SW1-4 OFF

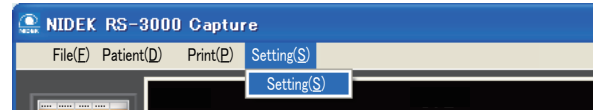


- 2) For OCT capture
 - a . SW1-1 OFF
 - b . SW1-2 ON
 - c . SW1-3 OFF
 - d . SW1-4 OFF

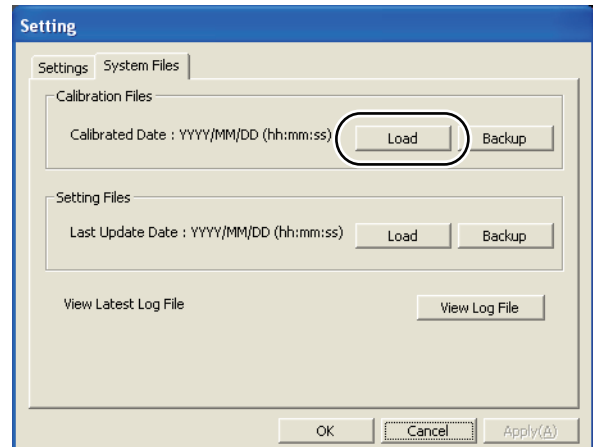


8.4 Loading OCT Calibration File

- 1 . Turn on power to the isolation transformer.
- 2 . Turn on power to the main body and PC.
- 3 . Activate RS-3000 Capture.
- 4 . Set the SO-1 calibration data (10701-E602) to the optical drive.
- 5 . Select “Setting” in the menu bar.



- 6 . Click the System Files tab.
- 7 . Click “Load” of Calibration Files.
- 8 . Specify the OCT calibration file corresponding to the serial number of the main body.
 - * ***** in “CalibrationLog_SN*****.log” indicates the serial number.



- 9 . Turn off power to the main body and PC.
- 10 . Turn off power to the isolation transformer.

8.5 Upgrading Software Version

8.5.1 Main body software upgrade

1 . Type of writing software

1) Boot loader

Activates the application and upgrades it with the USB flash drive.

2) Application

SO-1 operation program

2 . Writing software

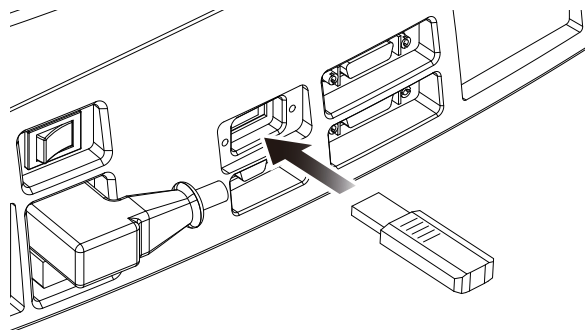
1) Copy the file for writing firmware in the PC to the root directory of the USB flash drive.

a . Boot loader file: so1_bootwrite_v*****.mot

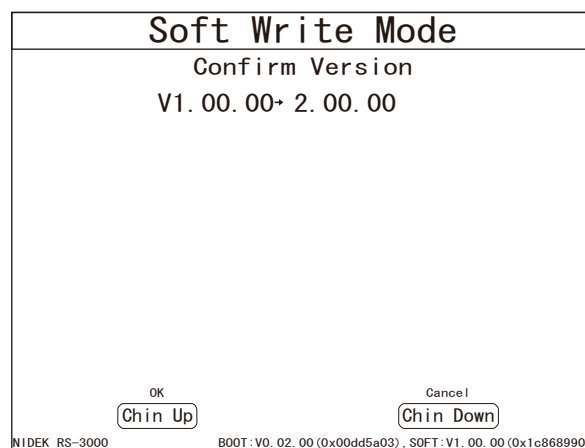
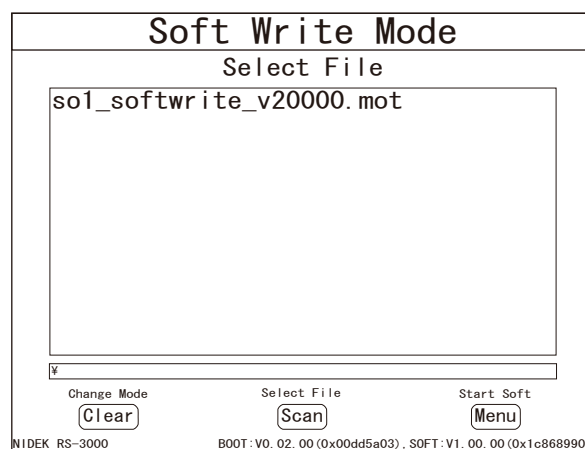
b . Application file: so1_softwrite_v*****.mot

* ***** varies according to the firmware version.

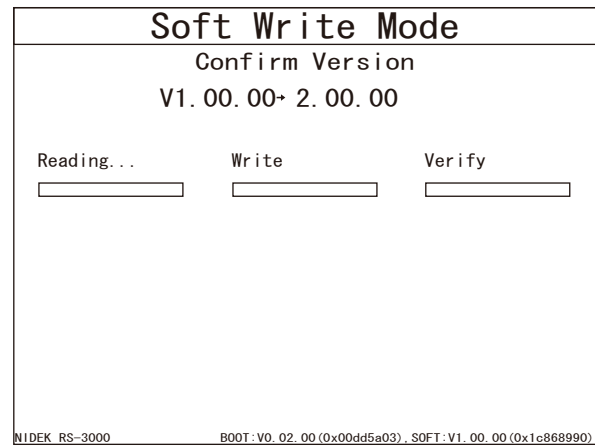
2) Insert the USB flash drive into the main body and turn on the power.



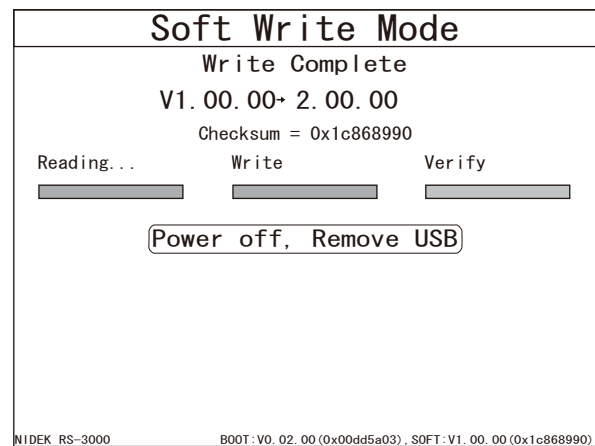
3) Select the firmware to be written from the file list.



4) Start writing.

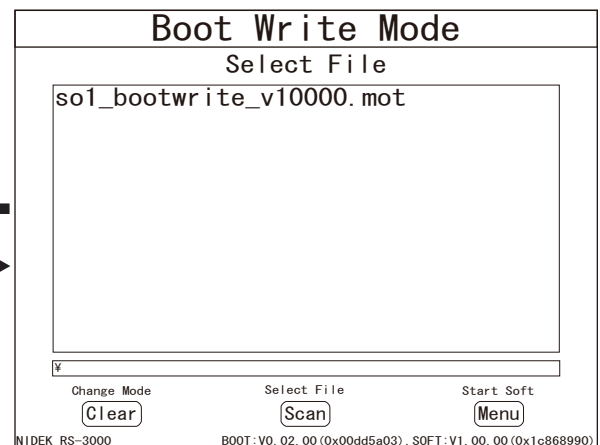
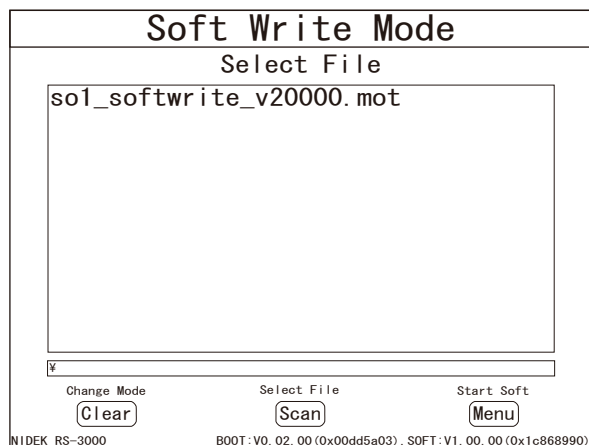


5) After the upgrade is completed, turn off the power.

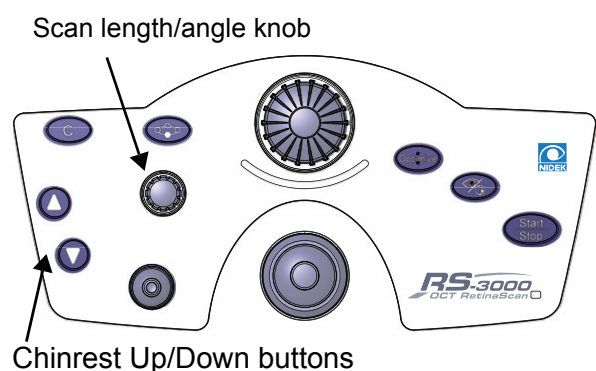


3 . Operational procedure

- 1) Pressing the Clear button: Toggles between the boot loader writing and application writing.



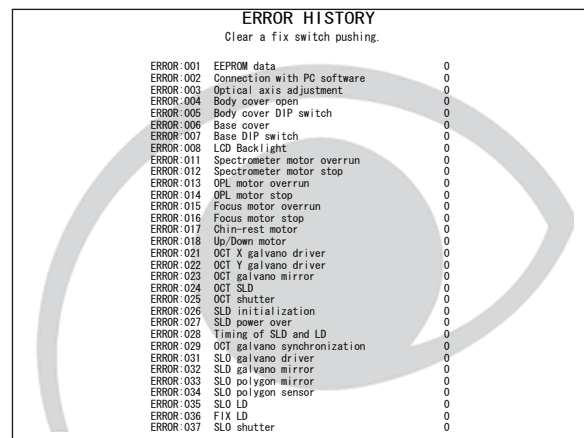
- 2) Turning the Scan length/angle knob: Selects the file to be written.
- 3) Pressing the Scan length/angle knob: Determines the file to be written.
- 4) Pressing the Chinrest Up button: Starts writing.
- 5) Pressing the Chinrest Down button: Cancels writing.



8.6 Checking Error Log

8.6.1 Error log of main body

- 1 . Select ERROR HISTORY.
- 2 . Check the error history during the use of the device.

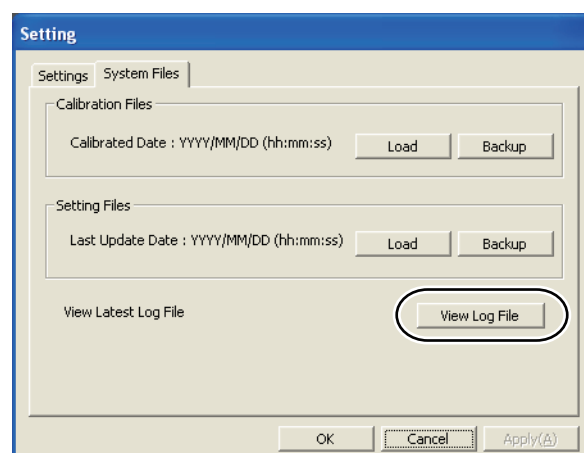


8.6.2 Error log file of RS-3000 Capture

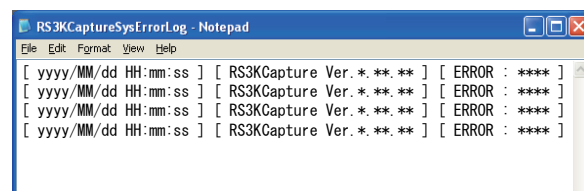
- 1 . Turn on power to the main body and PC.
- 2 . Activate RS-3000 Capture.
- 3 . Select Setting in the menu bar.



- 4 . Click the System Files tab.
- 5 . Click "View Log File" of View Latest Log File.



- 6 . Notepad opens and shows the error log.
 - 1) [yyyy/MM/dd HH:mm:ss]: Date
 - 2) [RS3KCapture Ver. *.*.*]: Software name
 - 3) [ERROR : ****]: Error code (4 digits)



8.7 Free Space in Hard Disk Drive

- 1 . If there is not enough free space in the hard disk drive, captured data cannot be saved. Obtain sufficient free space.

8.8 PC Settings

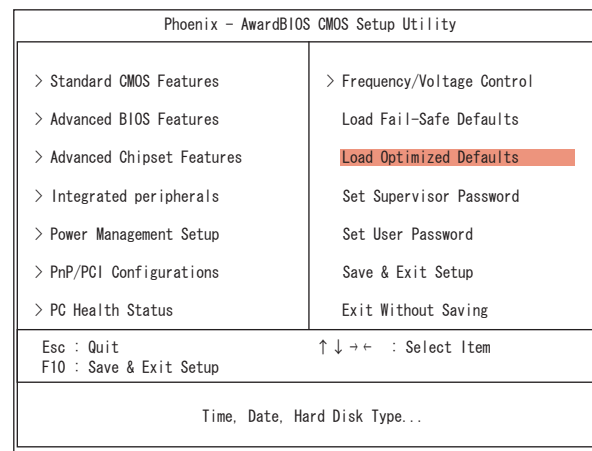
8.8.1 BIOS setting

- * When the PC battery is replaced, the internal clock date and time is cleared.

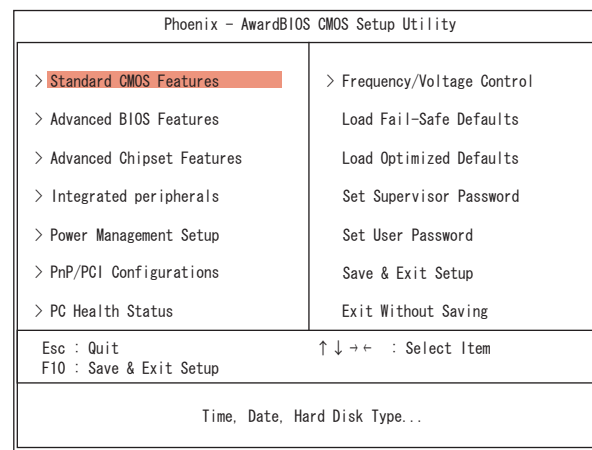
- 1 . Turn on power to the PC.
- 2 . The BIOS initial screen is displayed. “Press F1 to continue, DEL to enter SETUP” appears in the lower area of the screen.
- 3 . Press the Delete key to display the BIOS setting screen.
- 4 . Initialize the BIOS setting.

- 1) Select “Load Optimized Defaults” and press the Enter key.

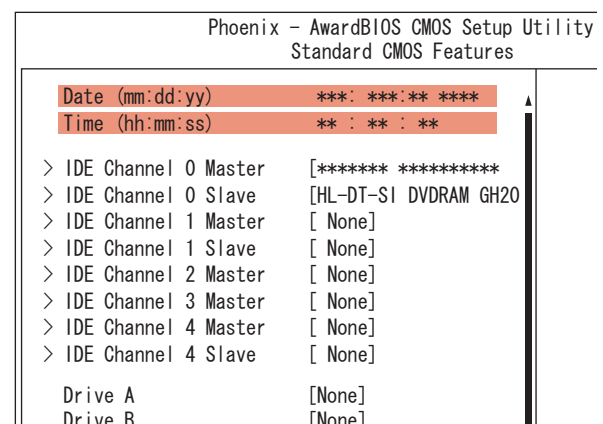
- * Execute it when Y is displayed.



- 5 . Select “Standard CMOS Features” and press the Enter key.
- 6 . The Standard CMOS Features setting screen is displayed.

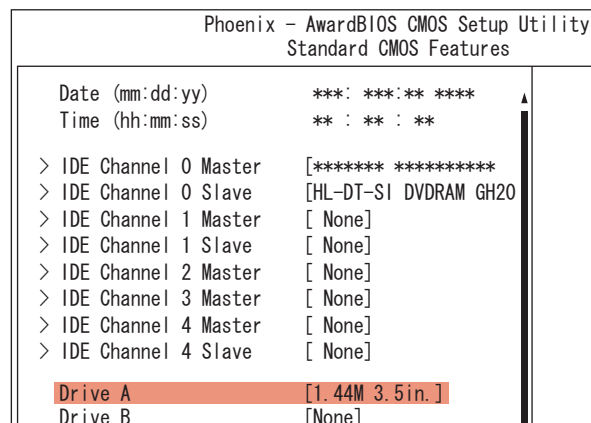


- 7 . Set the date and time.
 - 1) Select "Date" to set the date.
 - 2) Select "Time" to set the time.

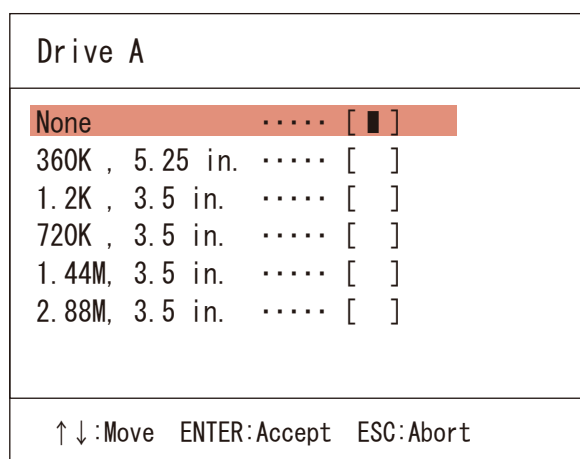


8 . Set "Drive A".

- 1) Select "Drive A" and press the Enter key.

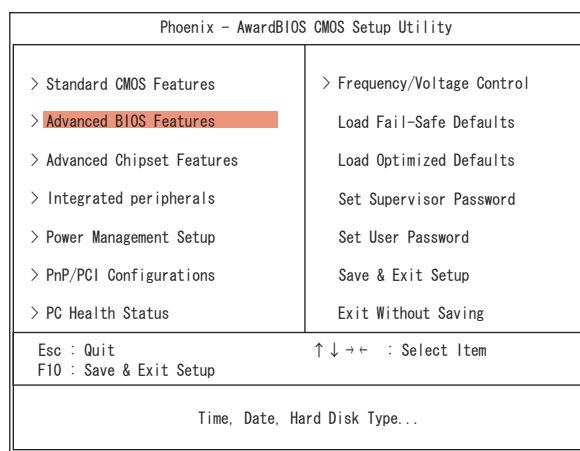


- 2) Move the cursor from "1.44M, 3.5 in." to "None", then press the Enter key.
- 3) Press the ESC key (Exit) to return to the BIOS setting screen.



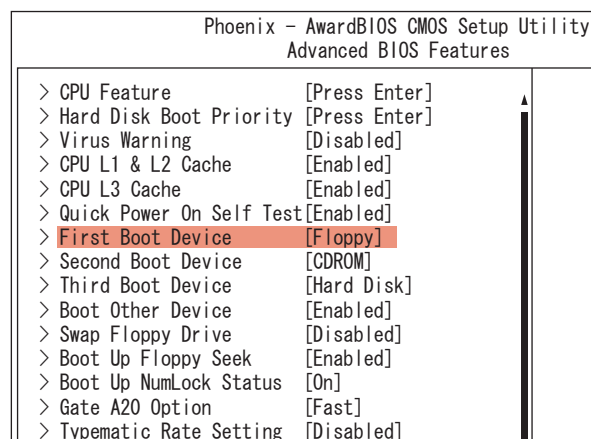
- 9 . Select "Advanced BIOS Features", then press the Enter key.

10. The Advanced BIOS Features setting screen is displayed.

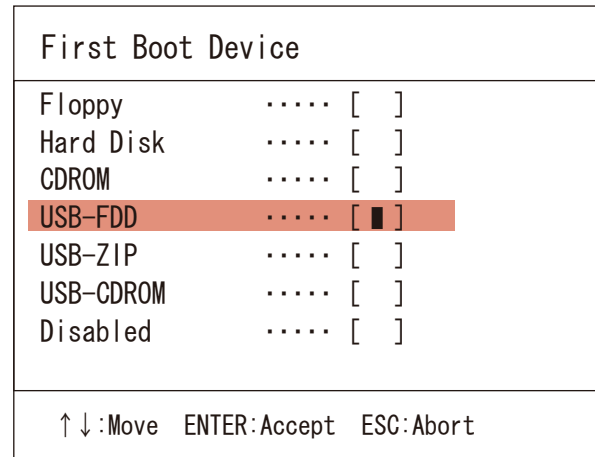


11. Set the order of the devices to be read during initialization.

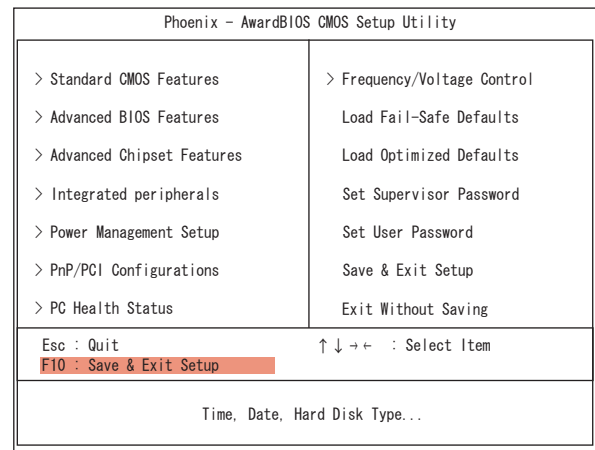
- 1) Select "First Boot Device", then press the Enter key.



- 2) Move the cursor from “Floppy” to “USB FDD”, then press the Enter key.
- 3) Press the ESC key (Exit) to return to the BIOS setting screen.

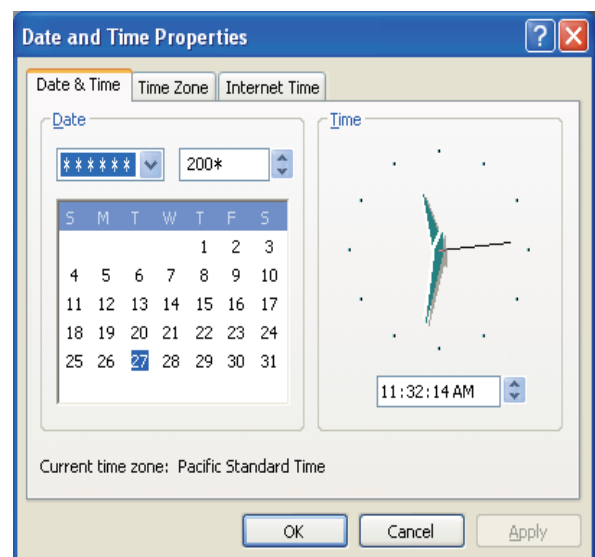


12. Press the F10 key (Save & Exit Setup), then the Enter key.
 - * Execute it when Y is displayed.
13. Windows XP is activated.
14. Check the date and time setting (see 8.8.2).



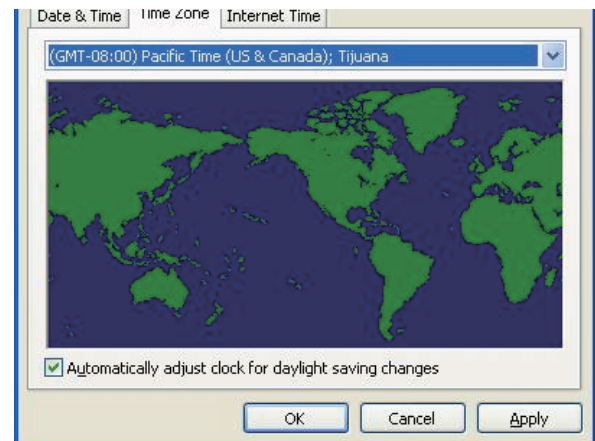
8.8.2 Date and time setting

- 1 . Click the start button of the PC, then click Control Panel.
- 2 . Click “Date, Time, Language, and Regional Options.”
- 3 . Click the Date & Time tab.
- 4 . Set the date and time, then click the OK button.



8.8.3 Time zone setting

- 1 . Click the start button of the PC, then click Control Panel.
- 2 . Click “Date, Time, Language, and Regional Options.”
- 3 . Click the Time Zone tab.
- 4 . Click the arrow at the right end of the box displayed and select from the list the region where the PC is used.
- 5 . Click the OK button.

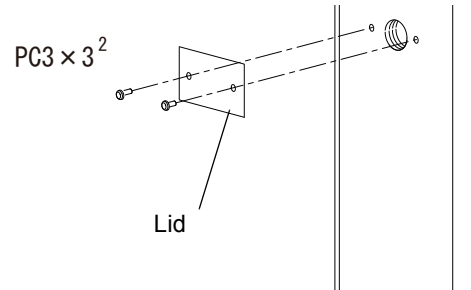


8.9 Motorized Optical Table

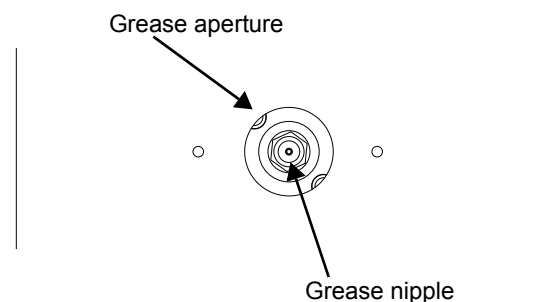
8.9.1 Injecting grease

- 1 . Prepare the grease gun (35930-M991) and grease (10730-M142).
 Grease (10730-M142): Sumitec 304 (SUMICO LUBRICANT CO., LTD)
 * Never use a grease gun that was used with any grease other than 10730-M142.

- 2 . Unscrew PC3 × 3 (n = 2) to remove the lid on the support of the motorized optical table.



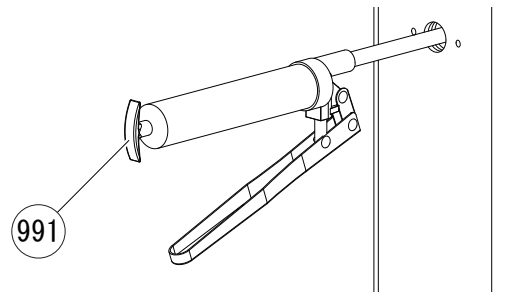
- 3 . Align the holes on the inner support and outer support. Adjust the table height so that the grease nipple is visible.



- 4 . Follow the steps below to inject the grease (10730-M142).

- 1) Supply the grease (10730-M142) to the grease gun (35930-M991).

- * For how to supply the grease (10730-M142) and how to use the grease gun (35930-M991), refer to the description attached to the grease gun.



- 2) Push the motorized optical table against the wall to fix it.

- 3) Make the grease gun (35930-M991) level with the grease nipple.

- * If the grease gun is held at an angle, space is left and the grease (10730-M142) cannot be injected inside the nipple.

- 4) Press the grease gun (35930-M991) against the nipple securely and inject the grease (10730-M142).

- * While the grease (10730-M142) is being injected, there is slight resistance.

- * If the grease (10730-M142) can be injected smoothly without any resistance, the grease (10730-M142) is scarcely injected inside the nipple and leaks outside. Stop injecting the grease (10730-M142) and restart from Step 3.

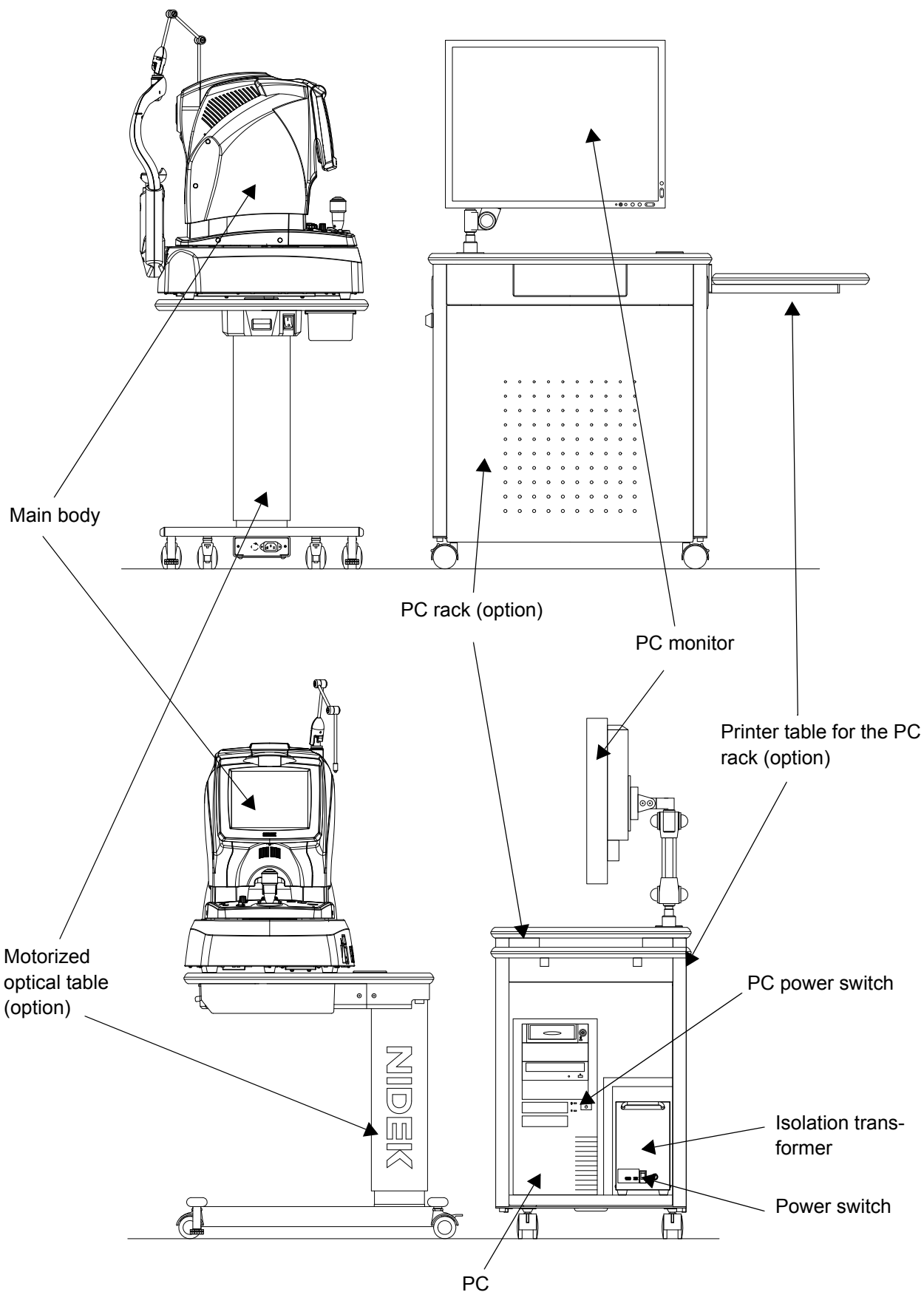
- 5) After the grease (10730-M142) is injected, move the motorized optical table up and down so that the grease (10730-M142) spreads.

- * If any abnormal sound is produced, it is necessary to repeatedly inject and spread the grease (10730-M142).

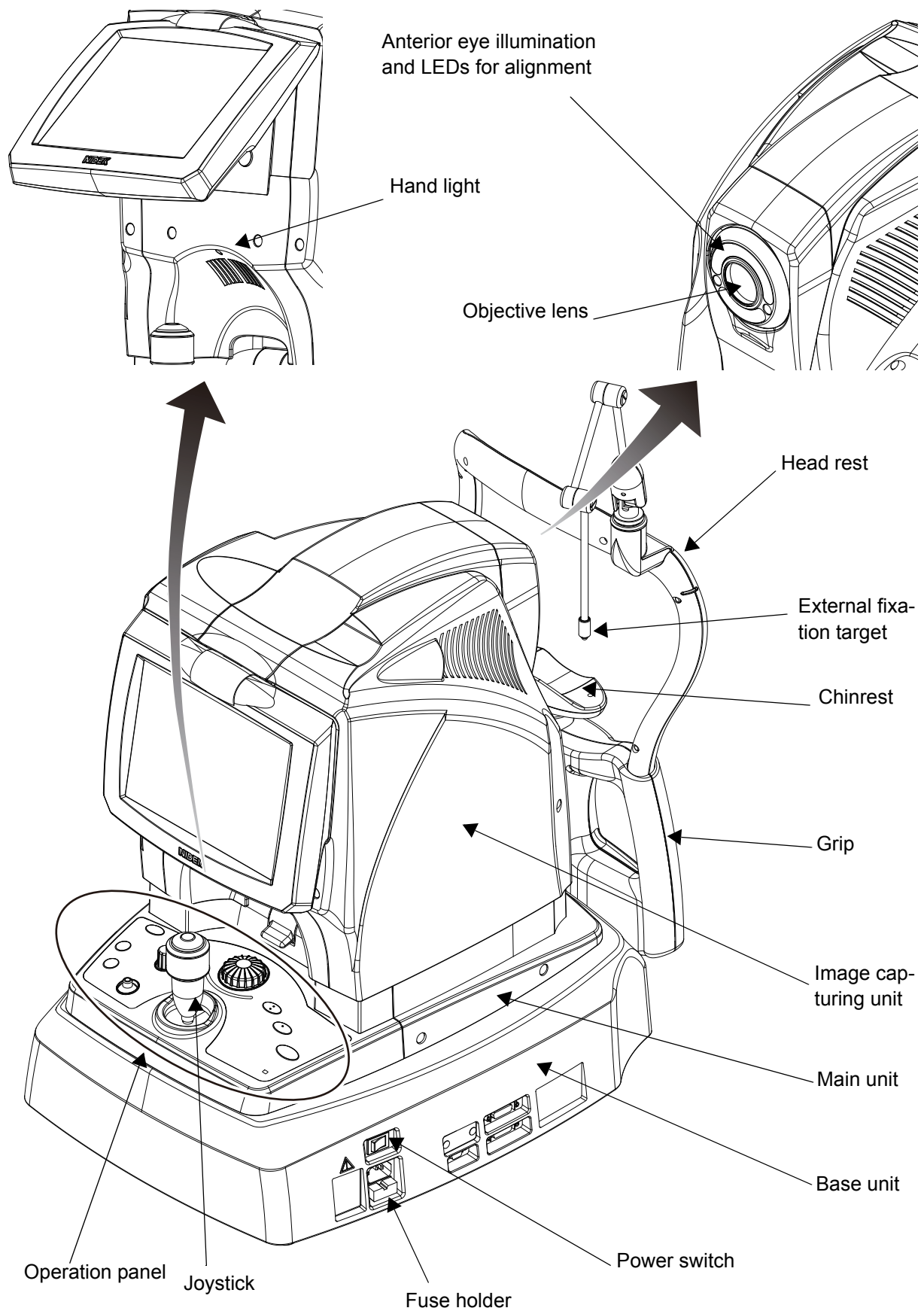
9 SUPPLEMENT

9.1 Appearance

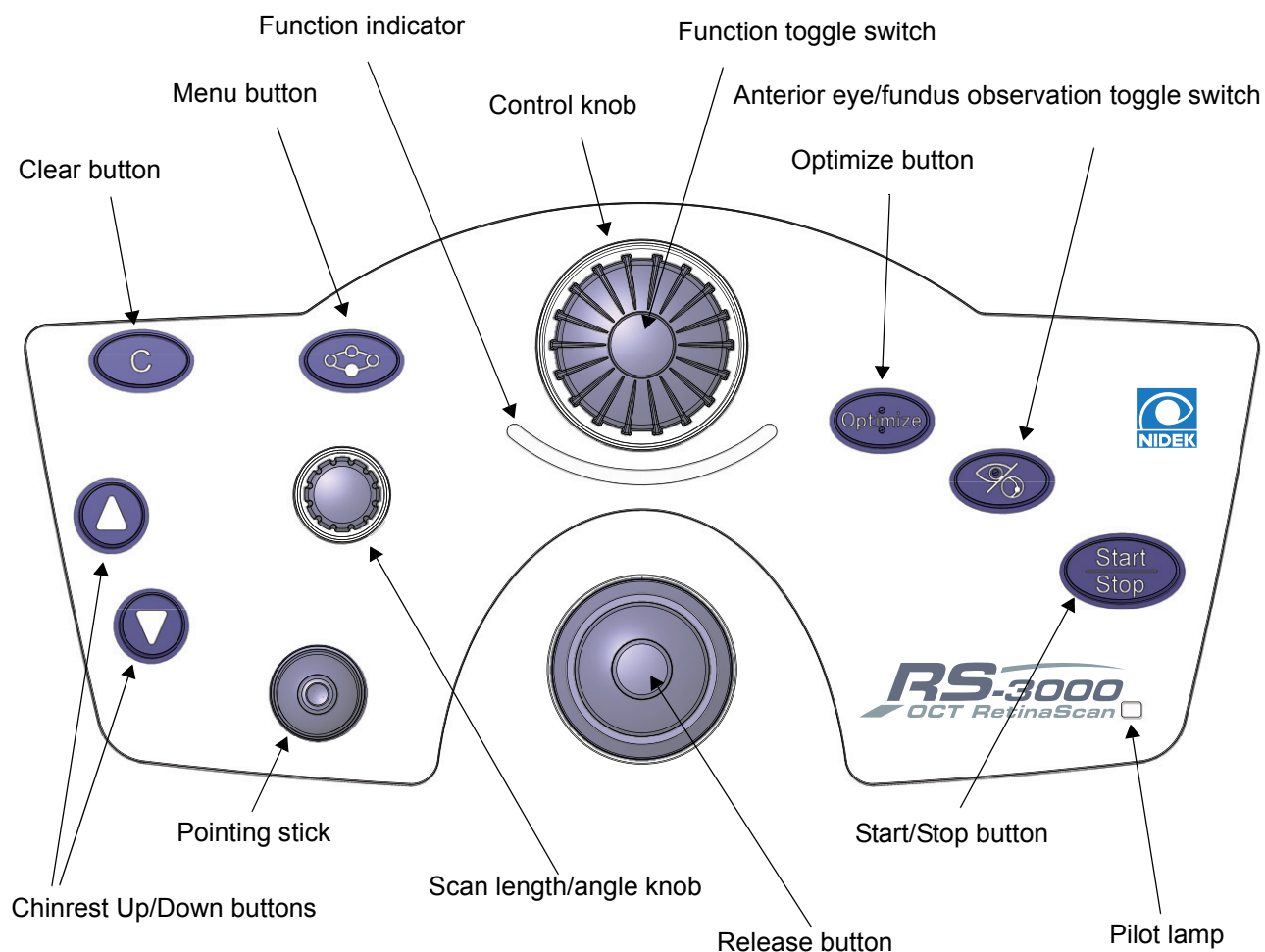
9.1.1 System configuration



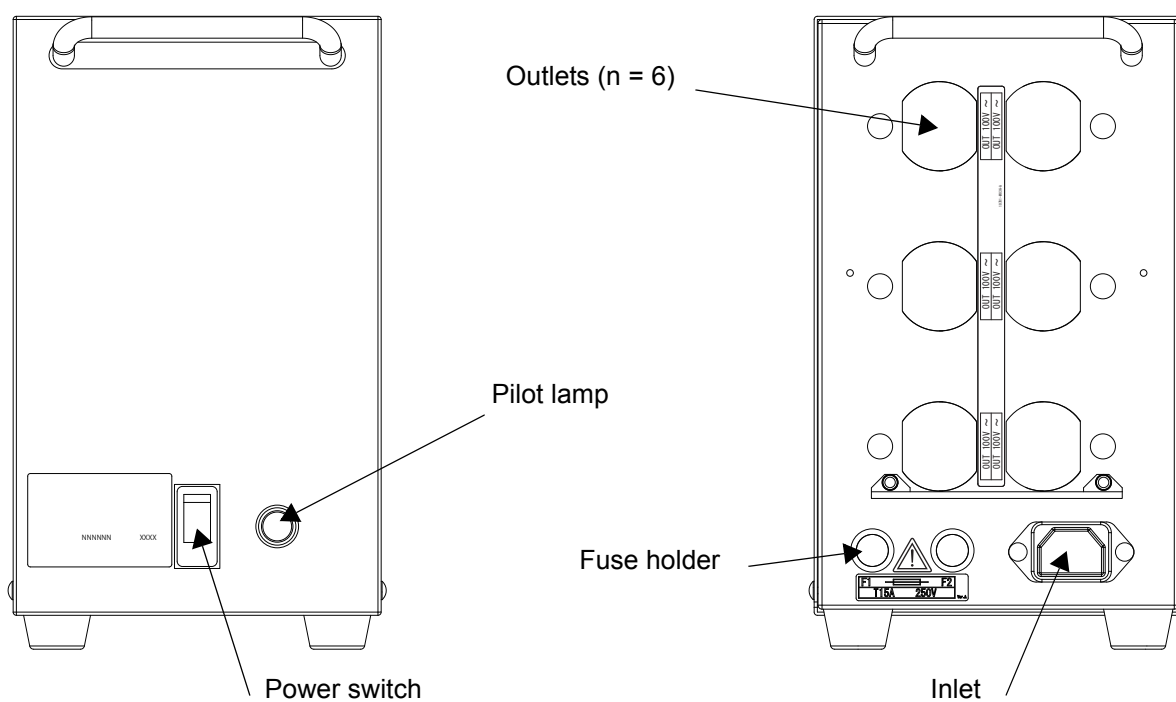
9.1.2 Main body



9.1.3 Operation panel



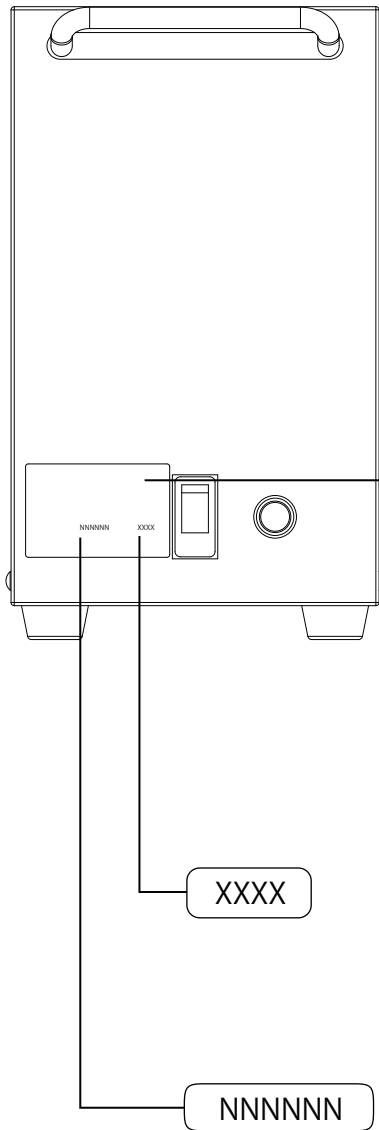
9.1.4 Isolation transformer



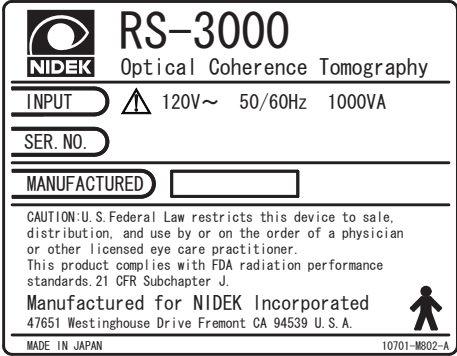
9.2 Labels

9.2.1 Transformer box

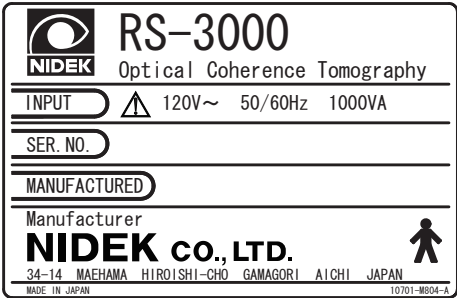
Front view



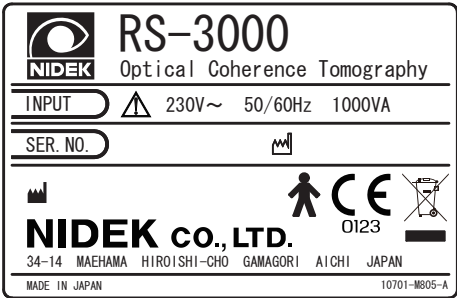
For USA



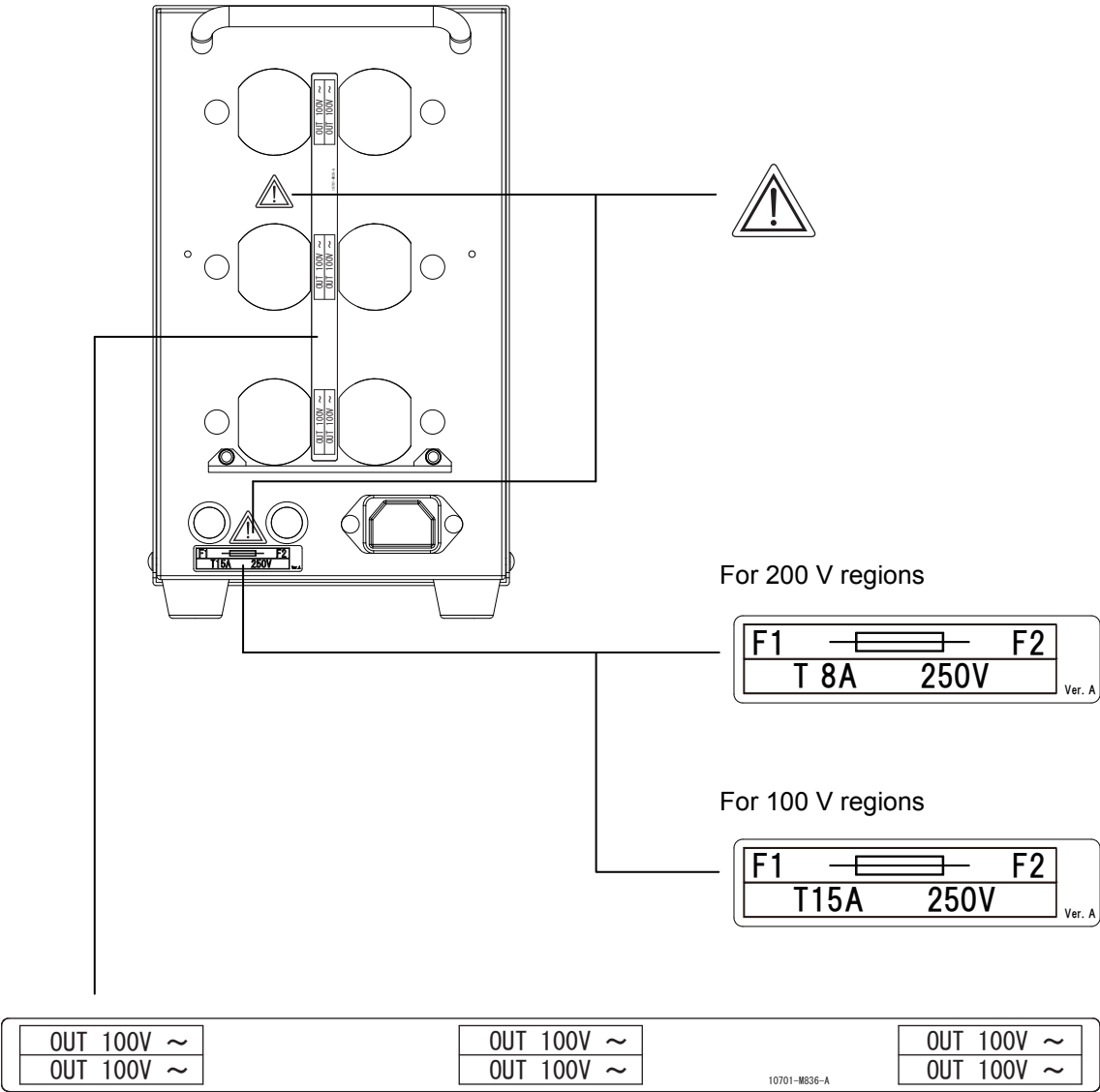
For 100 V regions



For 200 V regions

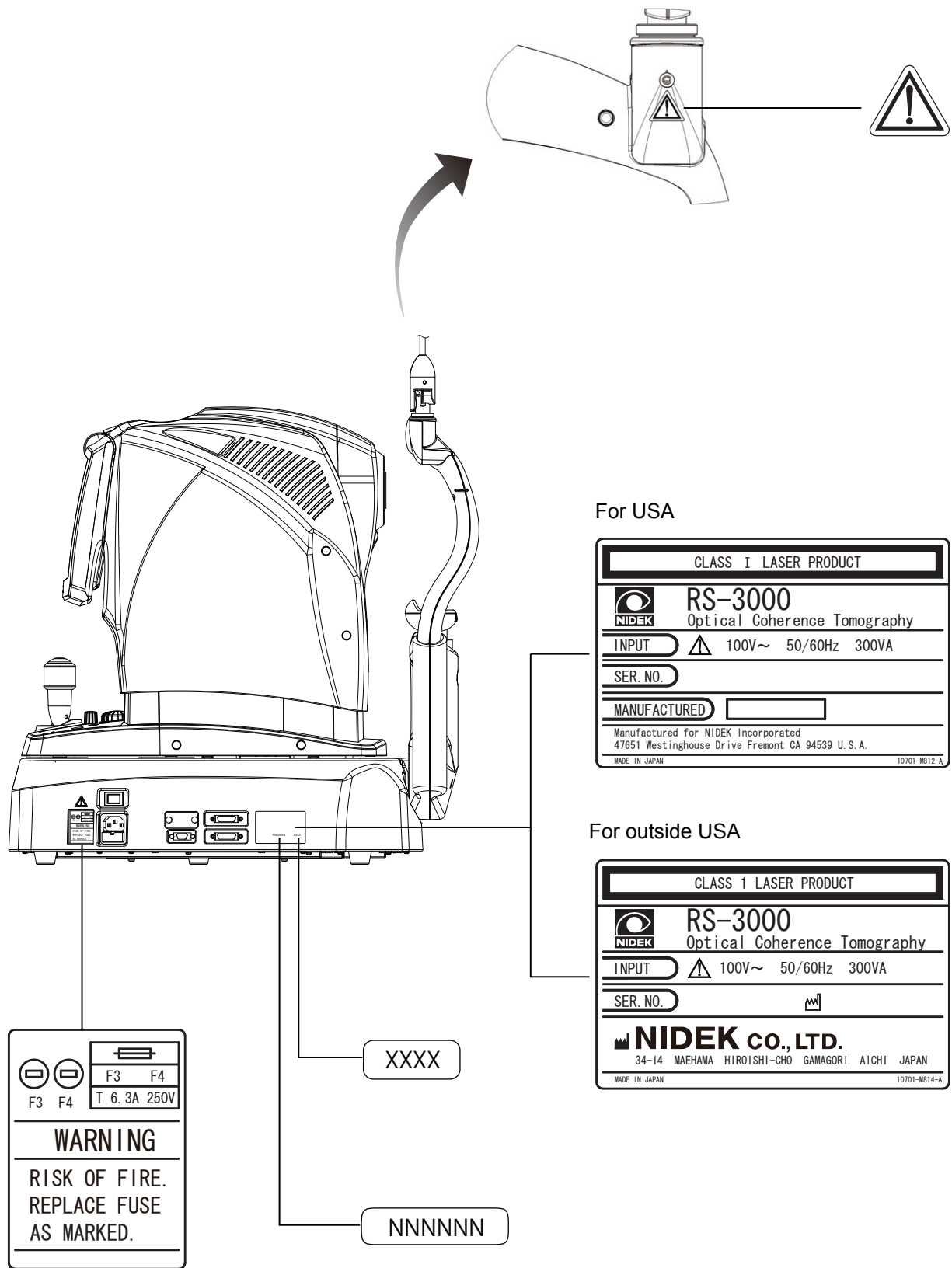


Rear view

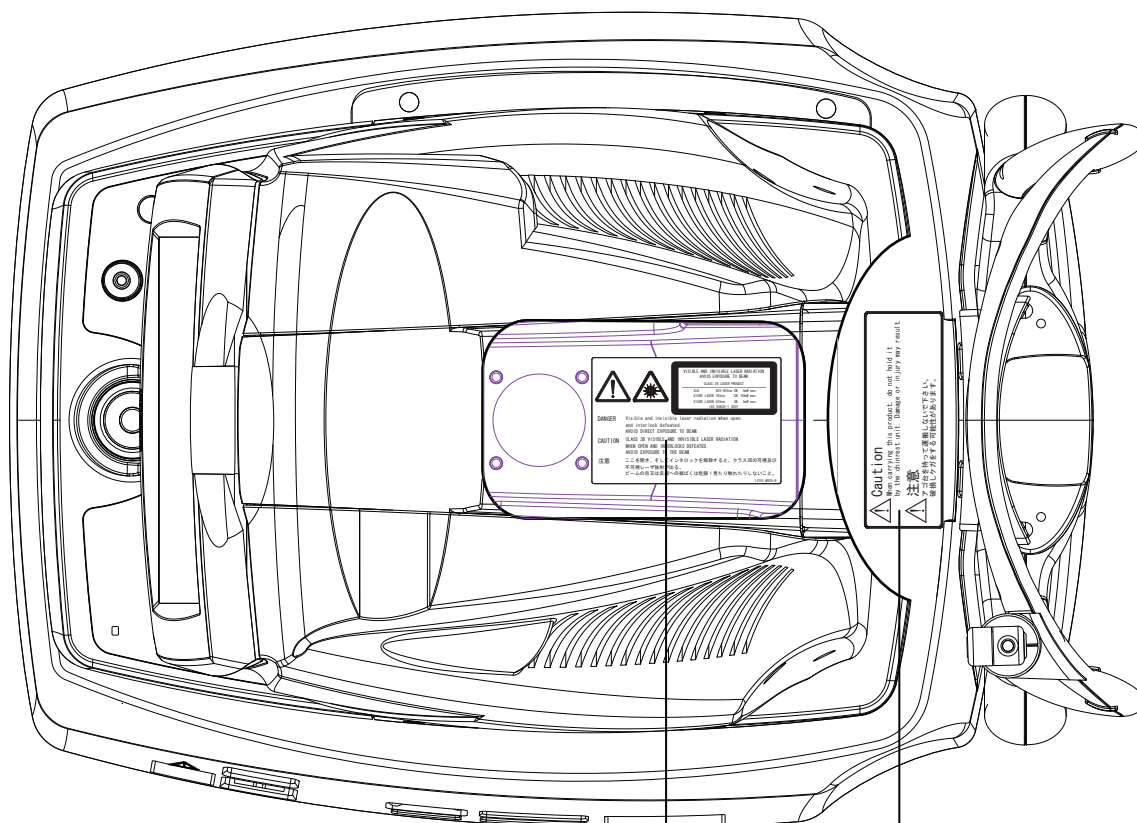



9.2.2 Main body

Side view



Top view





DANGER Visible and invisible laser radiation when open and interlock defeated.
AVOID DIRECT EXPOSURE TO BEAM.

CAUTION CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED.
AVOID EXPOSURE TO THE BEAM.


注意 ここを開き、そしてインタロックを解除すると、クラス3Bの可視及び不可視レーザ放射が出る。
ビームの目又は皮膚への被ばくは危険！見たり触れたりしないこと。

**VISIBLE AND INVISIBLE LASER RADIATION
AVOID EXPOSURE TO BEAM
CLASS 3B LASER PRODUCT**


SLD	855-905nm	CW	6mW max.
DIODE LASER	785nm	CW	90mW max.
DIODE LASER	635nm	CW	5mW max.

IEC 60825-1 2007

10701-M835-B

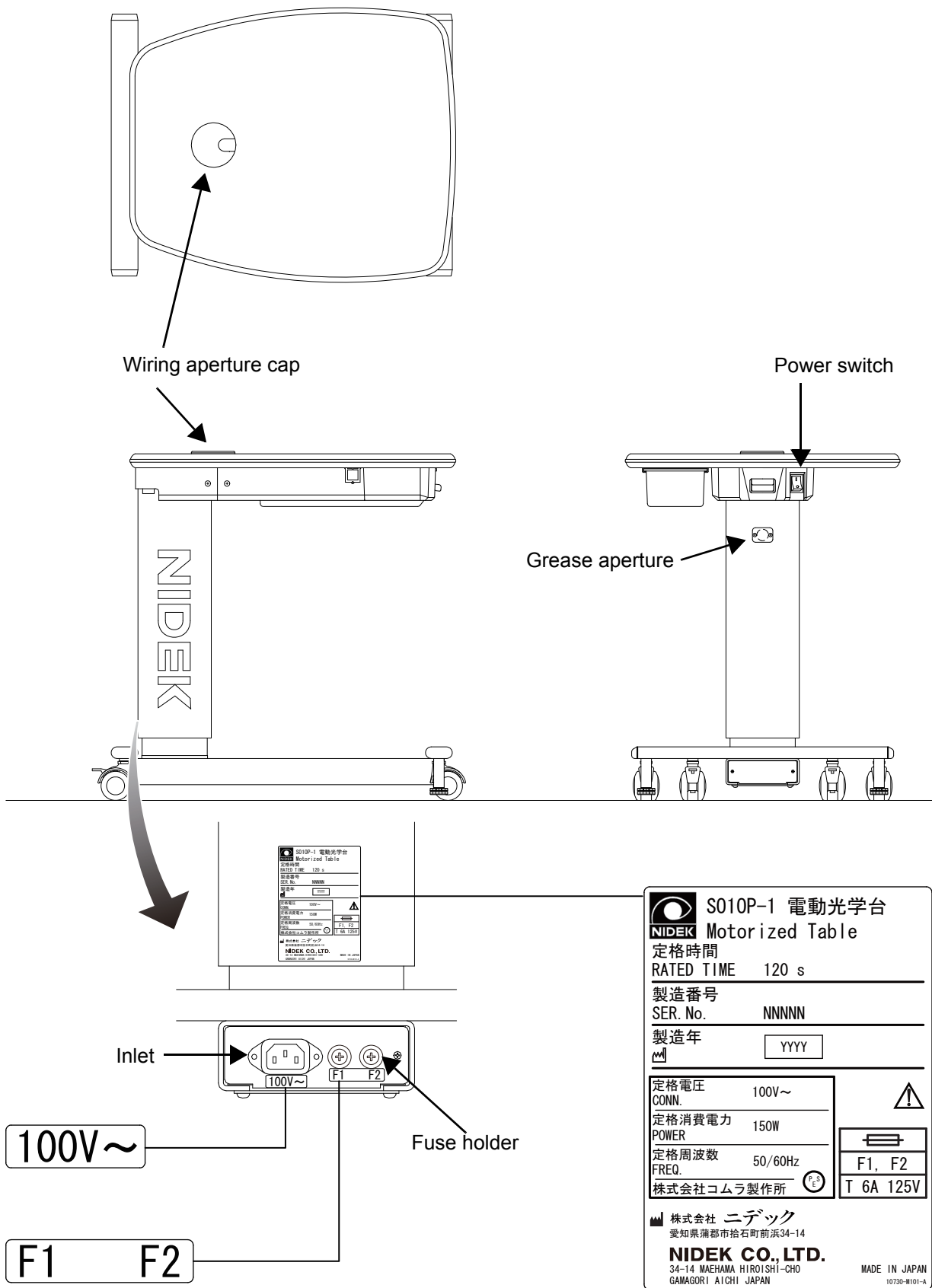


Caution
When carrying this product, do not hold it by the chinrest unit. Damage or injury may result.

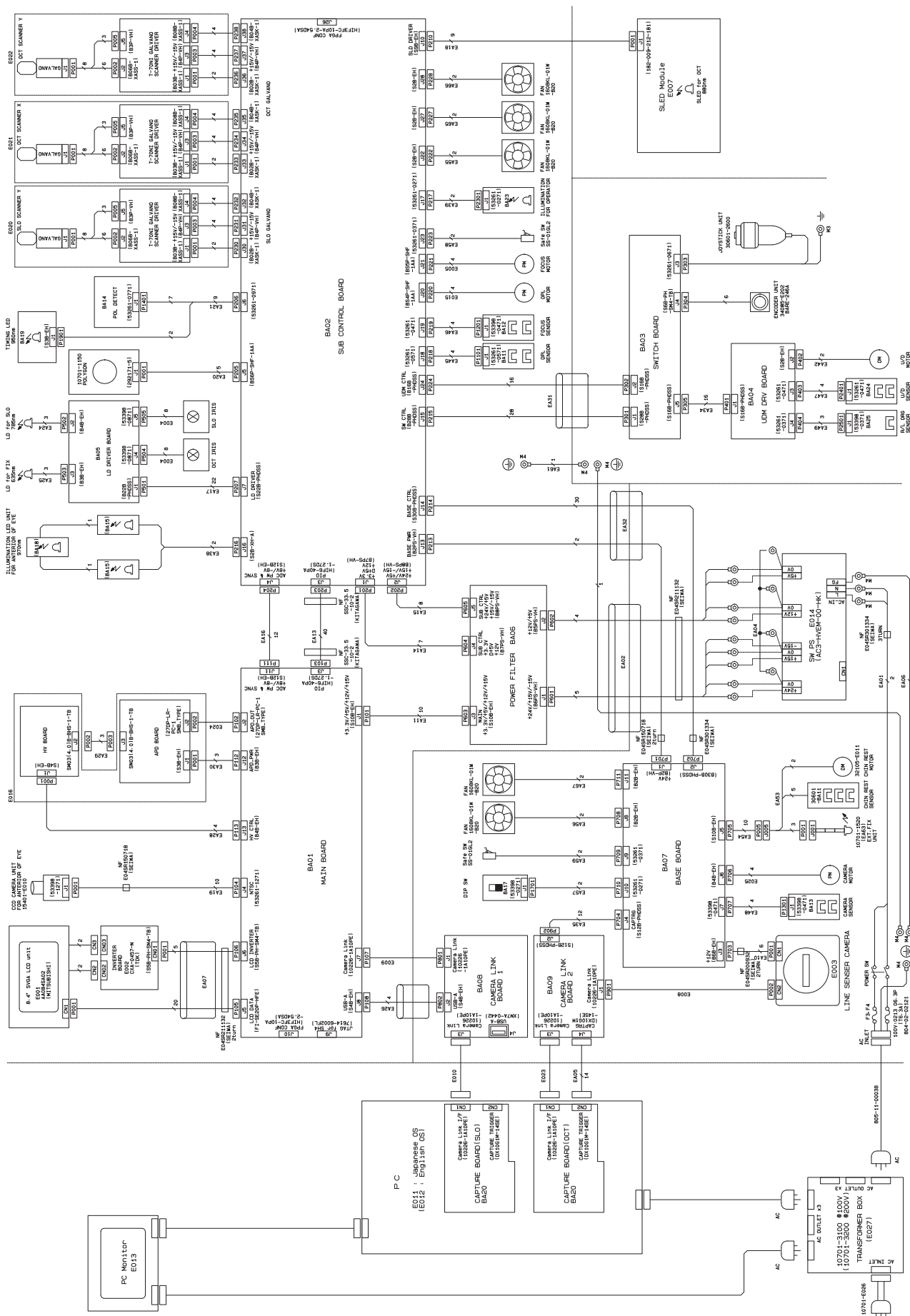


注意
アゴ台を持って運搬しないで下さい。
破損しケガをする可能性があります。

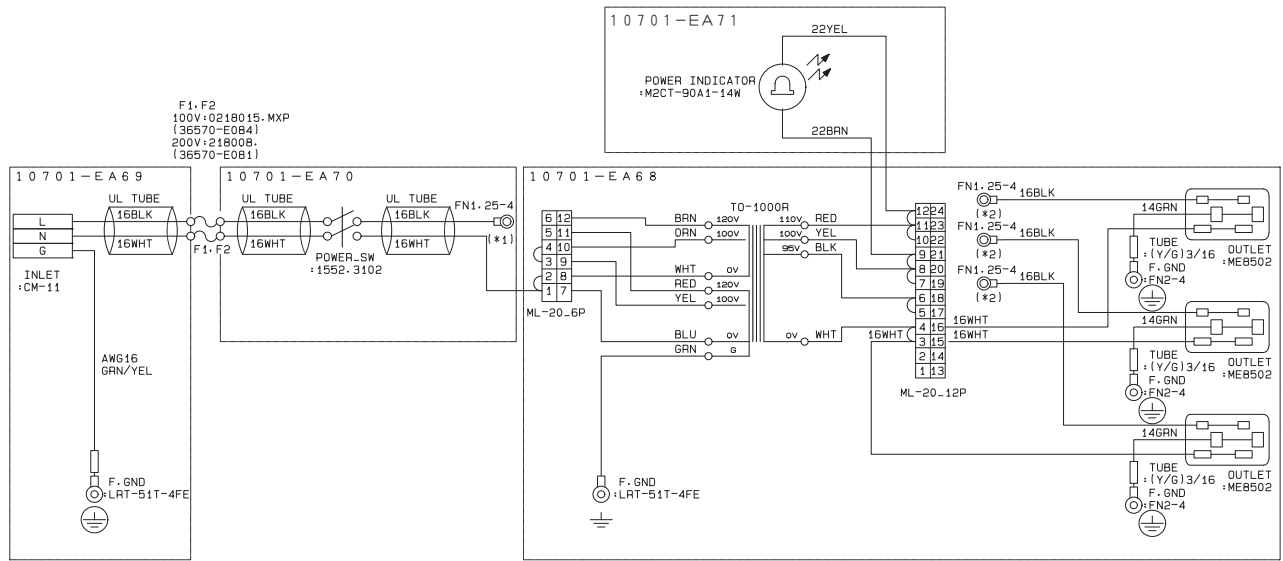
9.2.3 Motorized optical table



9.3 Wiring Diagram



Transformer box

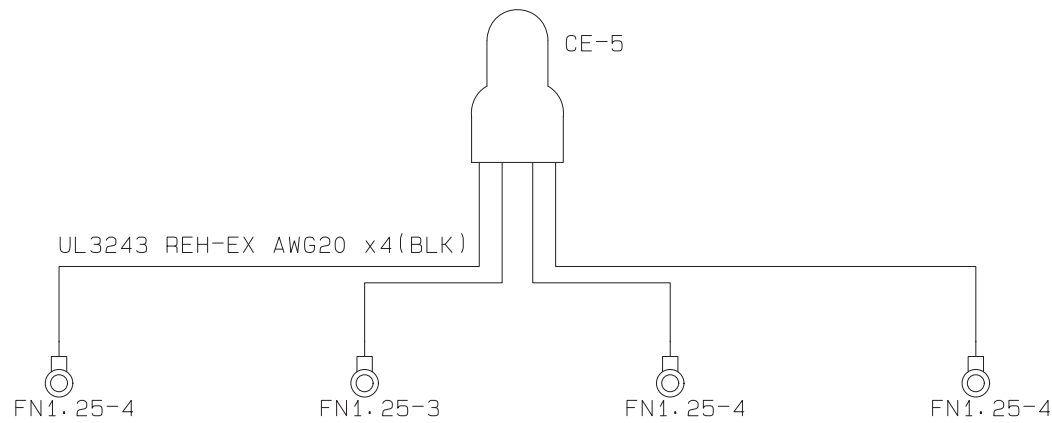


SELECTION VOLTAGE

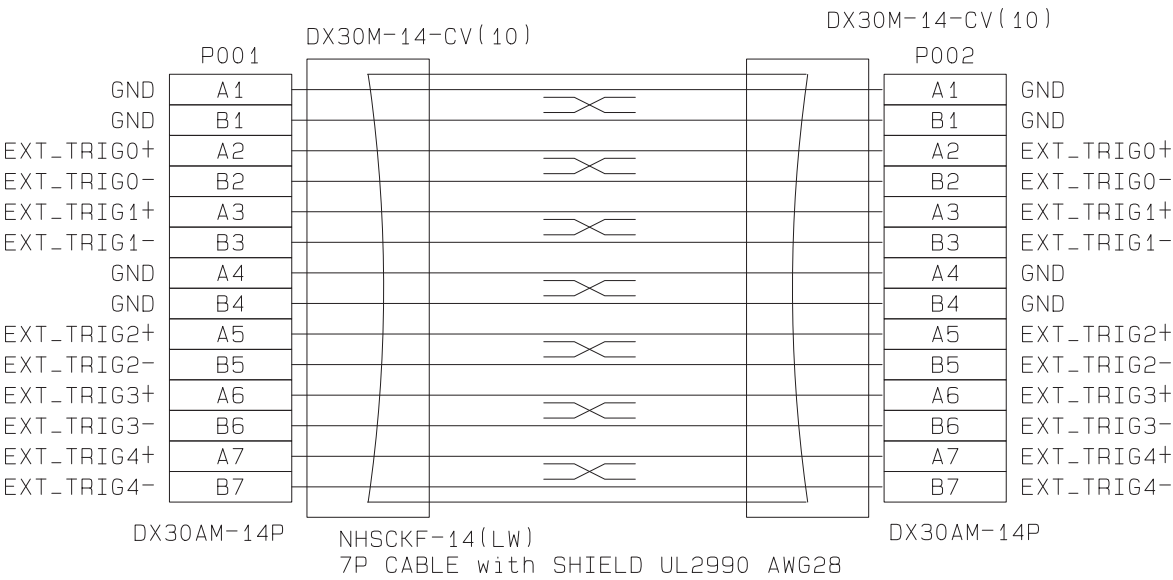
AC INPUT VOLTAGE	TRANSFORMER PRIMARY VOLTAGE	PRIMARY TERMINAL CONNECTION (*1)	TRANSFORMER SECONDARY VOLTAGE	SECONDARY TERMINAL CONNECTION (*2)	SHORT BAR TYPE (*3)
100V	100V PARALLEL	SHORT BAR 1-2, 3-4, BLK→3, WHT→1	100V	BLK→19, 20, 7	x5, x2
110V	120V PARALLEL	SHORT BAR 1-2, 5-6, BLK→5, WHT→1	110V	BLK→10, 22, 23	x5, x2
115V	120V PARALLEL	SHORT BAR 1-2, 5-6, BLK→5, WHT→1	110V	BLK→10, 22, 23	x5, x2
120V	120V PARALLEL	SHORT BAR 1-2, 5-6, BLK→5, WHT→1	100V	BLK→19, 20, 7	x5, x2
125V	120V PARALLEL	SHORT BAR 1-2, 5-6, BLK→5, WHT→1	95V	BLK→5, 17, 18	x5, x2
127V	120V PARALLEL	SHORT BAR 1-2, 5-6, BLK→5, WHT→1	95V	BLK→5, 17, 18	x5, x2
220V	120V, 100V SERIES	SHORT BAR 2-3, BLK→6, WHT→1	100V	BLK→19, 20, 7	x4, x2
230V	120V, 100V SERIES	SHORT BAR 2-3, BLK→6, WHT→1	95V	BLK→5, 17, 18	x4, x2
240V	120V, 120V SERIES	SHORT BAR 2-5, BLK→6, WHT→1	100V	BLK→19, 20, 7	x3, x2, x1
250V	120V, 120V SERIES	SHORT BAR 2-5, BLK→6, WHT→1	95V	BLK→5, 17, 18	x3, x2, x1

(*3) SHORT BAR: T261C (Kasuga) x 4
[Pole: 6, Pitch: 11mm, Screw: 4mm]

10701-EA04



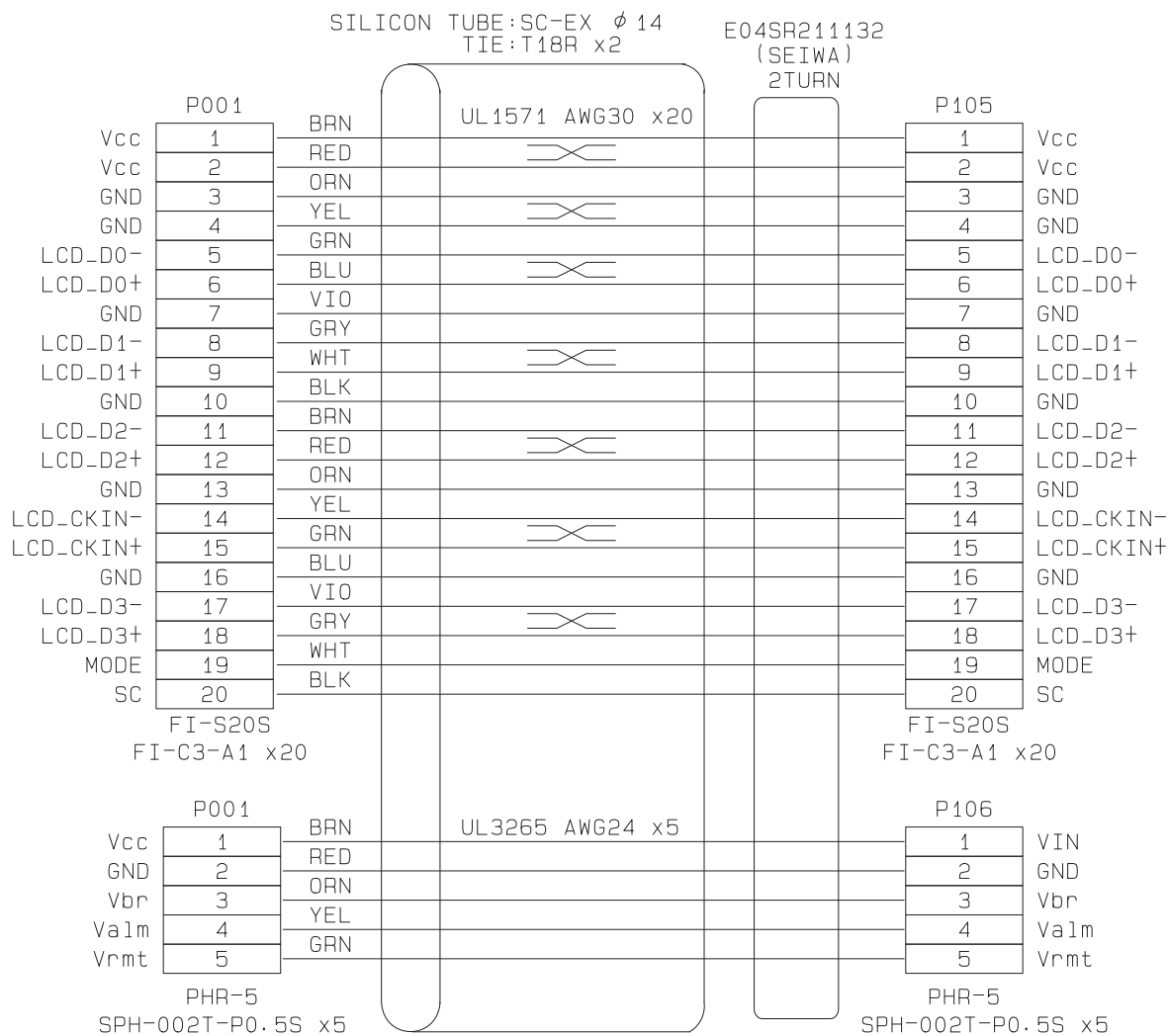
10701-EA05



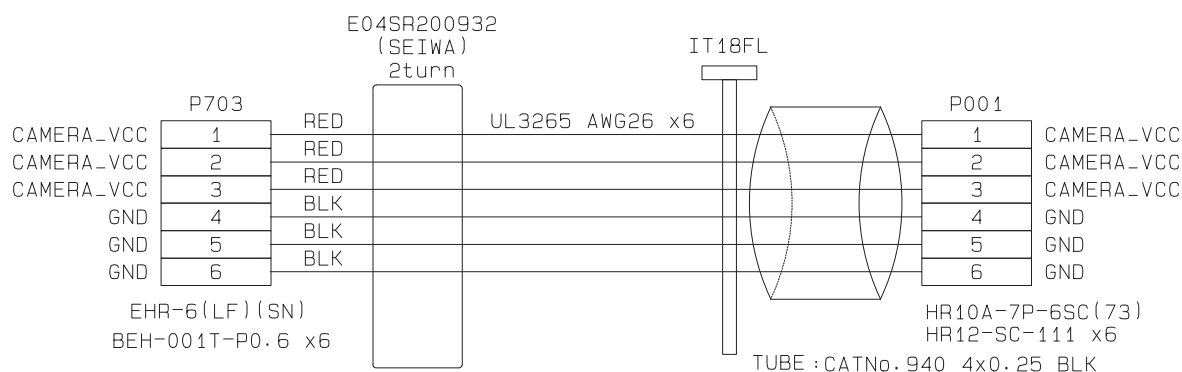
10701-EA06



10701-EA07



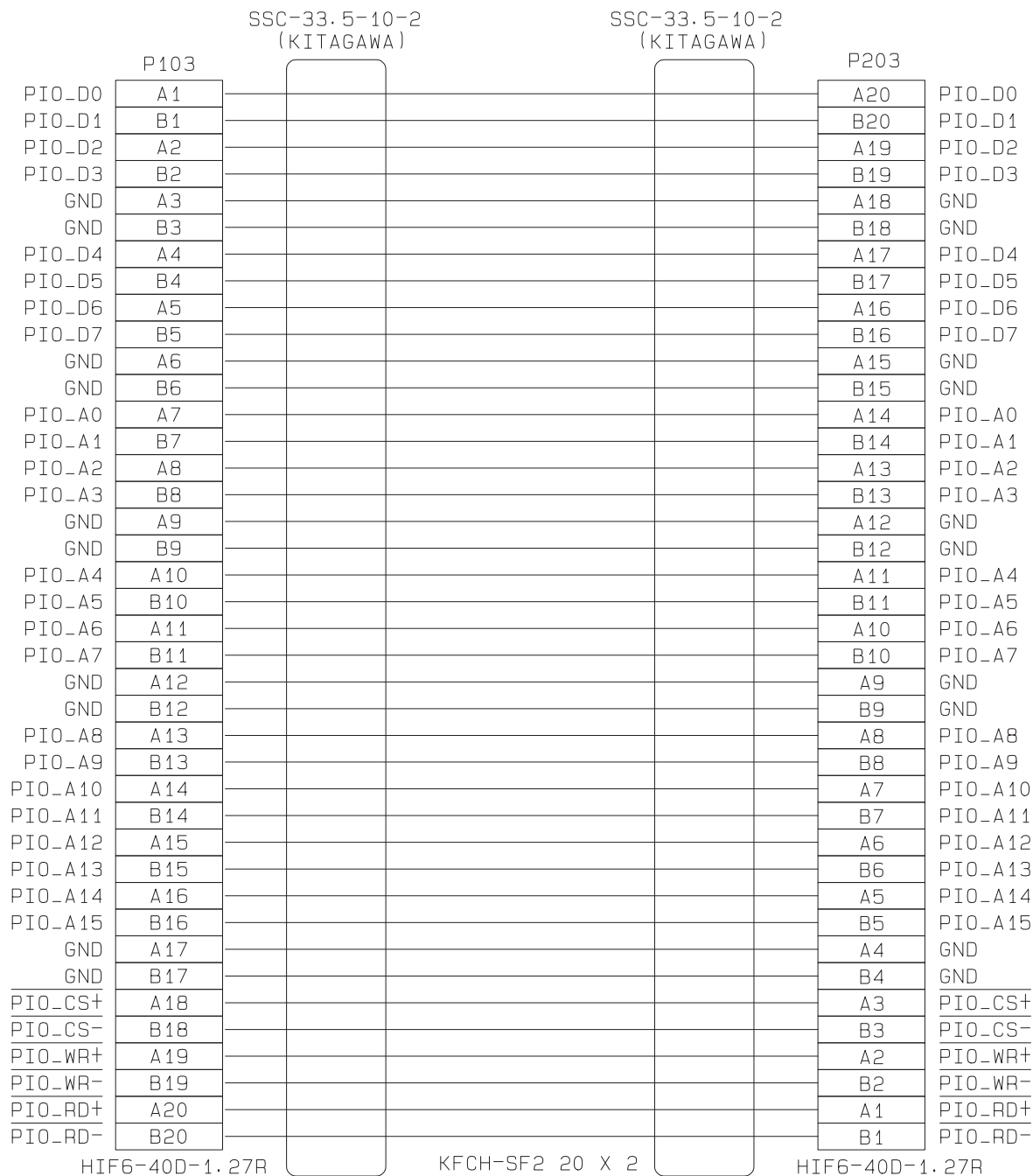
10701-EA10



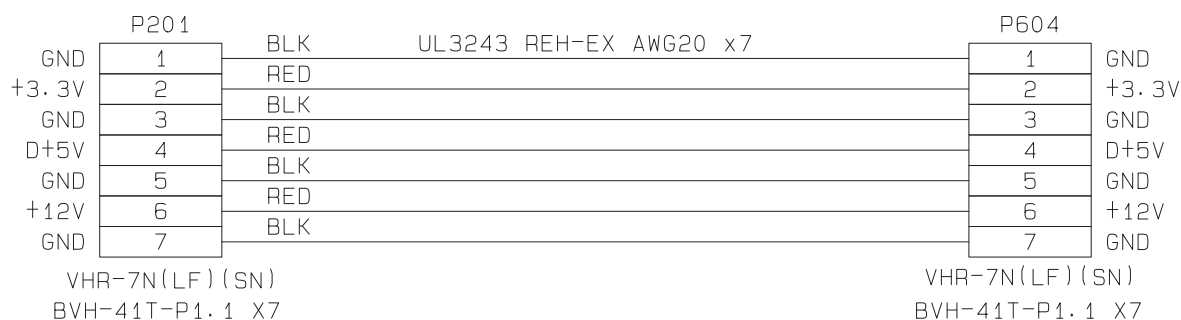
10701-EA11

P101		UL3243 REH-EX AWG22 x10	P603	
GND	1	BLK	1	GND
+3.3V	2	RED	2	+3.3V
+3.3V	3	RED	3	+3.3V
GND	4	BLK	4	GND
+5V	5	RED	5	+5V
GND	6	BLK	6	GND
GND	7	BLK	7	GND
+12V	8	RED	8	+12V
GND	9	BLK	9	GND
+15V	10	RED	10	+15V
EHR-10(LF)(SN)			EHR-10(LF)(SN)	
BEH-001T-P0.6 x10			BEH-001T-P0.6 x10	

10701-EA13



10701-EA14



10701-EA15

P202			UL3243 REH-EX AWG20 x8			P605		
+24V	1	RED				1	+24V	
GND	2	BLK				2	GND	
SLD+5V	3	RED				3	SLD+5V	
GND	4	BLK				4	GND	
+15V	5	RED				5	+15V	
GND	6	BLK				6	GND	
-15V	7	RED				7	-15V	
GND	8	BLK				8	GND	
VHR-8N(LF)(SN)						VHR-8N(LF)(SN)		
BVH-41T-P1.1 X8						BVH-41T-P1.1 X8		

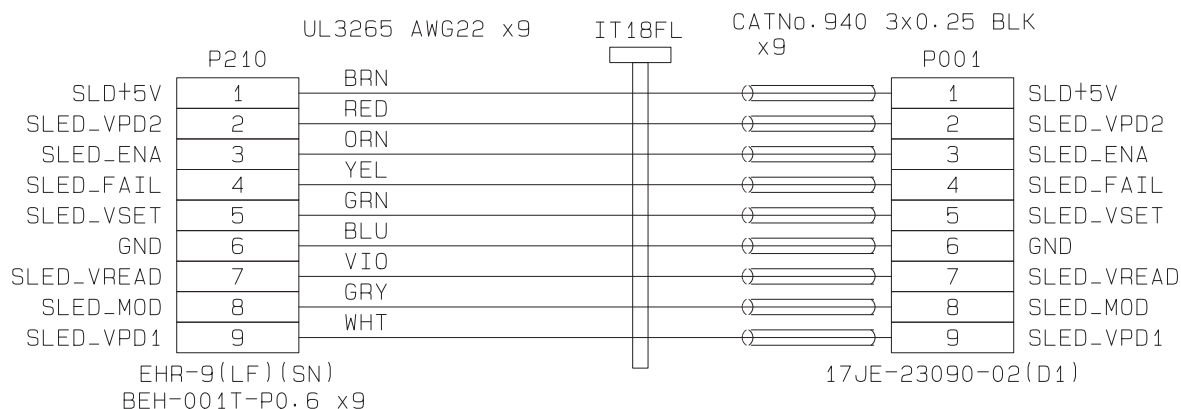
10701-EA16

P111			UL3265 AWG24 x12			P204		
A+8V	1	BRN				1	A+8V	
GND	2	RED				2	GND	
A-8V	3	ORN				3	A-8V	
GND	4	YEL				4	GND	
POL_SEN_FB+	5	GRN				5	POL_SEN_FB+	
POL_SEN_FB-	6	BLU				6	POL_SEN_FB-	
AD_CLK+	7	VIO				7	AD_CLK+	
AD_CLK-	8	GRY				8	AD_CLK-	
GND	9	WHT				9	GND	
AD_SW	10	BLK				10	AD_SW	
SCN_VS	11	BRN				11	SCN_VS	
POL_SEN	12	RED				12	POL_SEN	
EHR-12(LF)(SN)						EHR-12(LF)(SN)		
BEH-001T-P0.6 x12						BEH-001T-P0.6 x12		

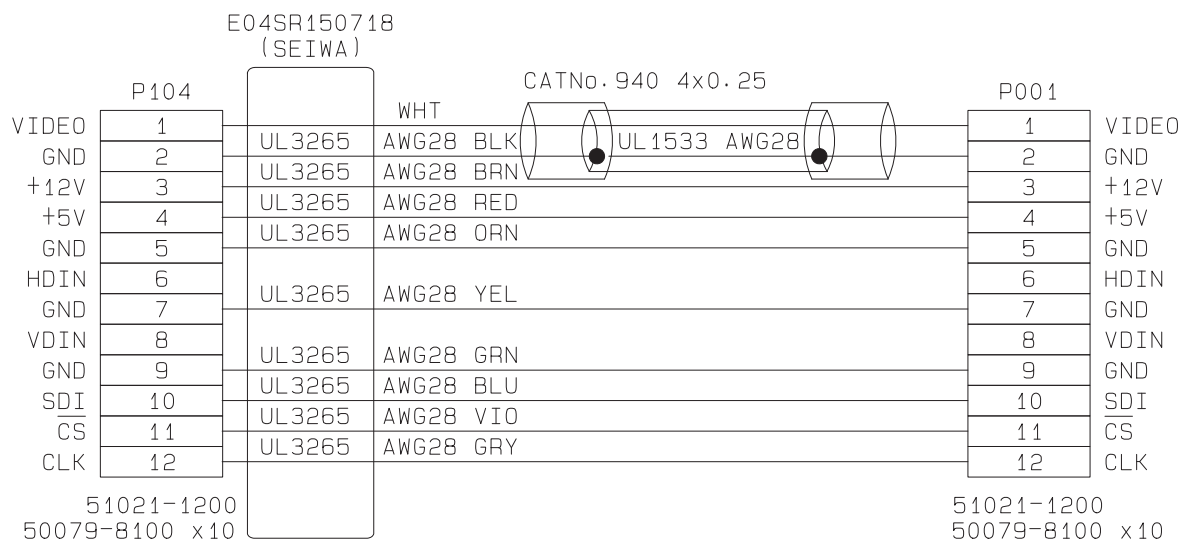
10701-EA17

P207			UL3265 AWG24 x22			P501		
+5V	1	BRN				1	+5V	
+5V	2	RED				2	+5V	
GND	3	ORN				3	GND	
GND	4	YEL				4	GND	
635_APC	5	GRN				5	635_APC	
785_APC	6	BLU				6	785_APC	
635_ALM	7	VIO				7	635_ALM	
785_ALM	8	GRY				8	785_ALM	
635_EN	9	WHT				9	635_EN	
785_EN	10	BLK				10	785_EN	
GND	11	BRN				11	GND	
635_MOD+	12	RED				12	635_MOD+	
635_MOD-	13	ORN				13	635_MOD-	
785_MOD+	14	YEL				14	785_MOD+	
785_MOD-	15	GRN				15	785_MOD-	
GND	16	BLU				16	GND	
IRIS1_ON	17	VIO				17	IRIS1_ON	
IRIS2_ON	18	GRY				18	IRIS2_ON	
IRIS1_OPEN	19	WHT				19	IRIS1_OPEN	
IRIS2_OPEN	20	BLK				20	IRIS2_OPEN	
GND	21	BRN				21	GND	
SLD_ERR	22	RED				22	SLD_ERR	
PHDR-22VS						PHDR-22VS		
SPHD-001T-P0.5 x22						SPHD-001T-P0.5 x22		

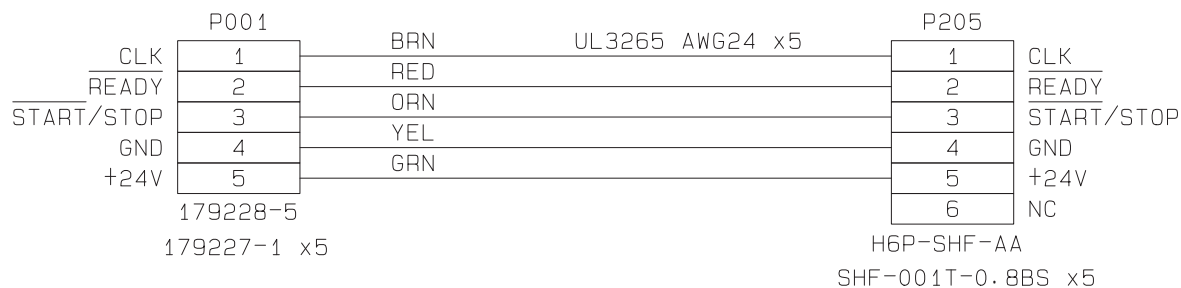
10701-EA18



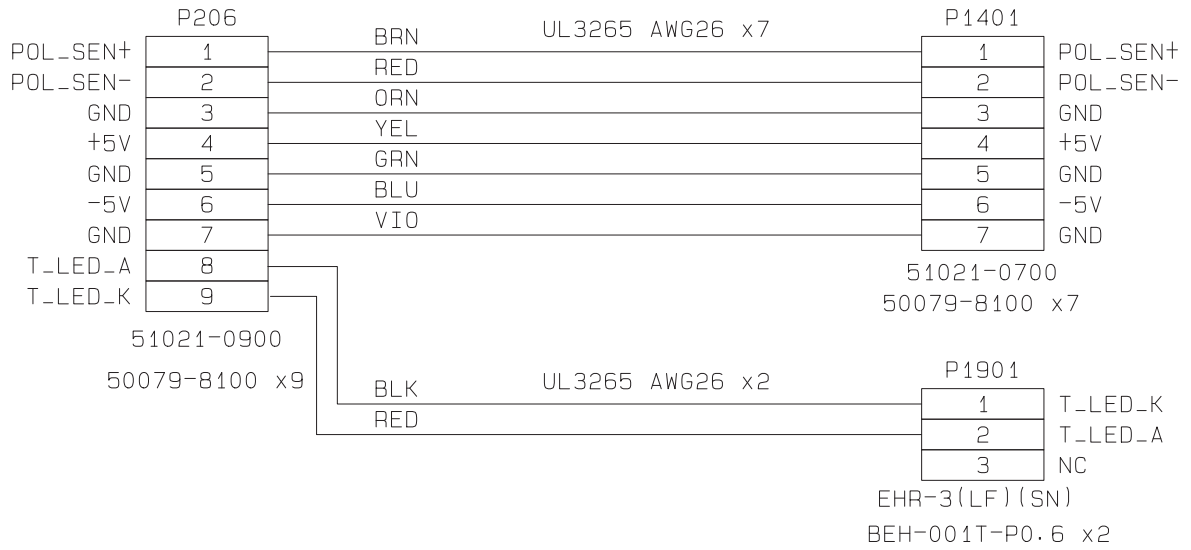
10701-EA19



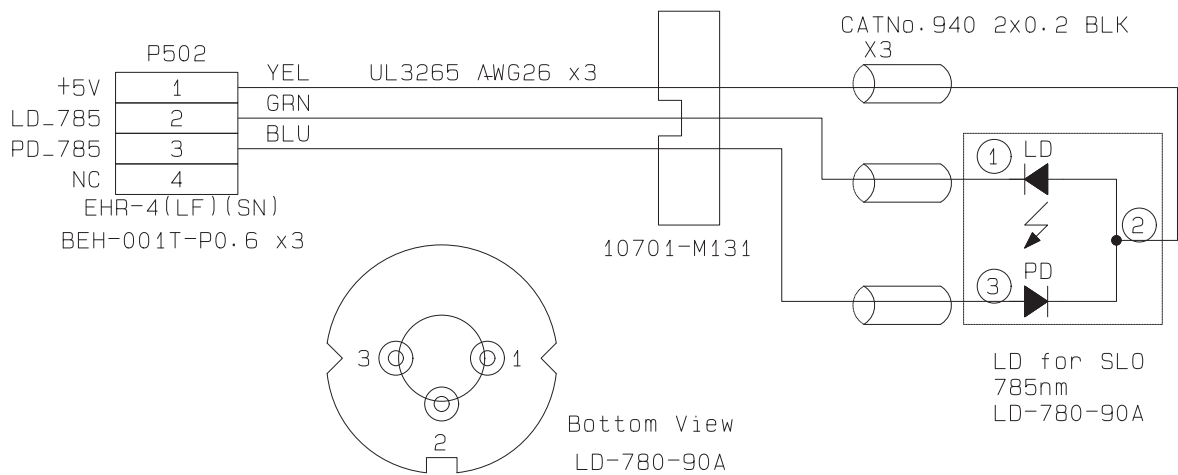
10701-EA20



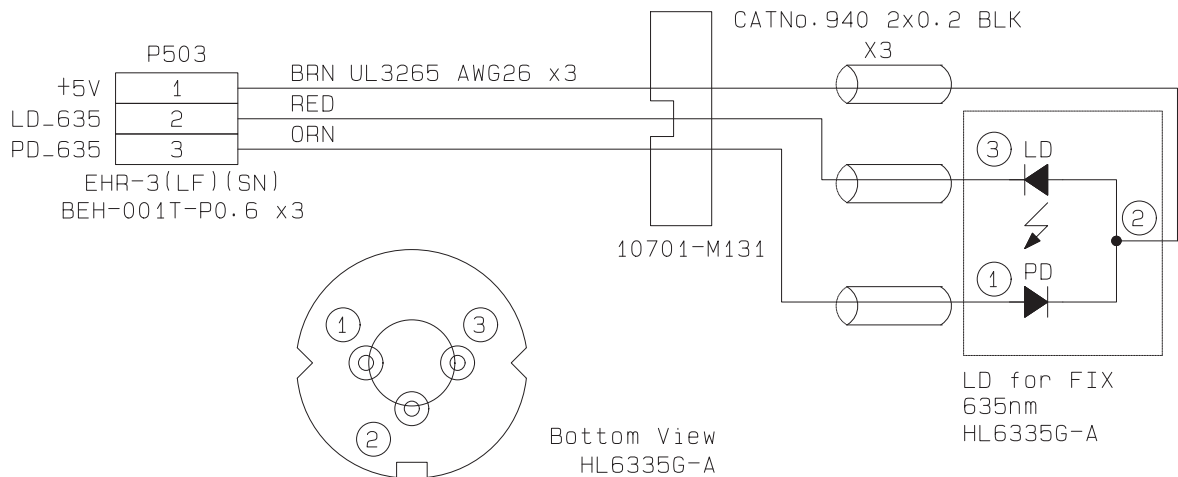
10701-EA21



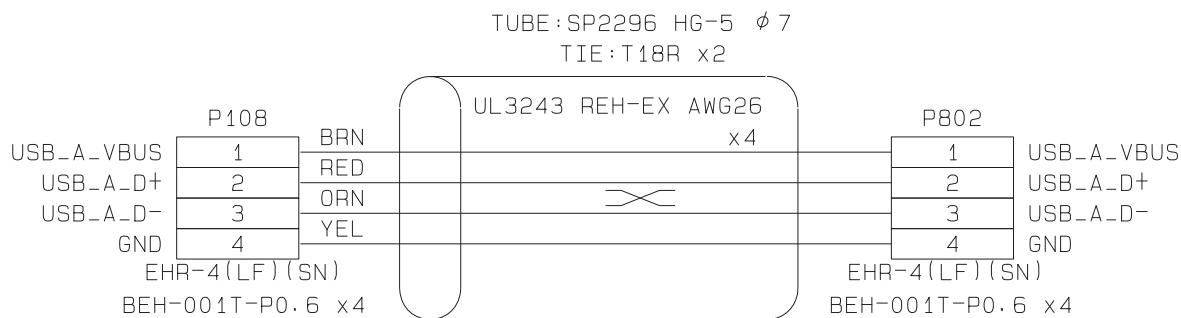
10701-EA24



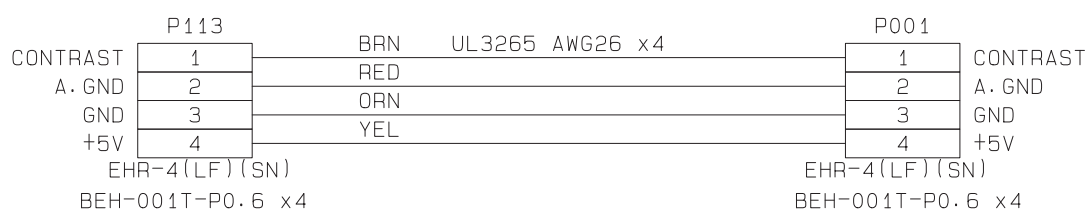
10701-EA25



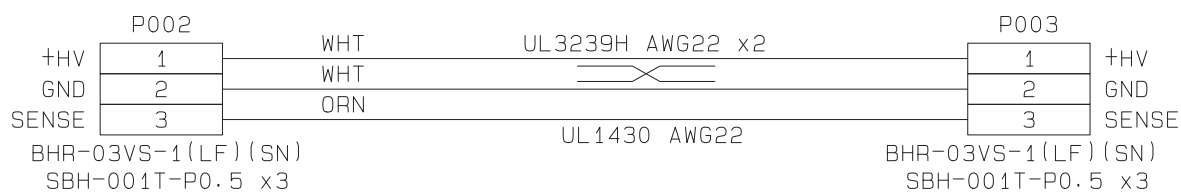
10701-EA26



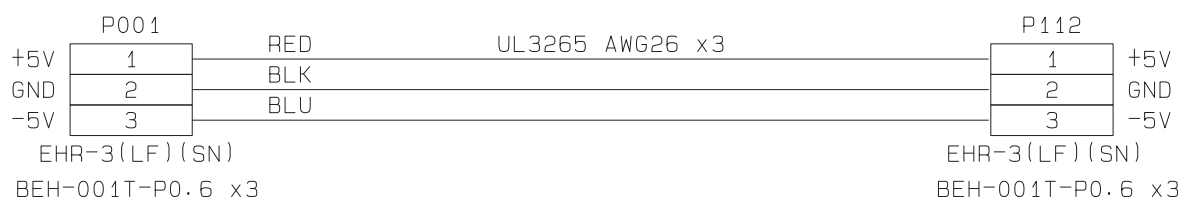
10701-EA28



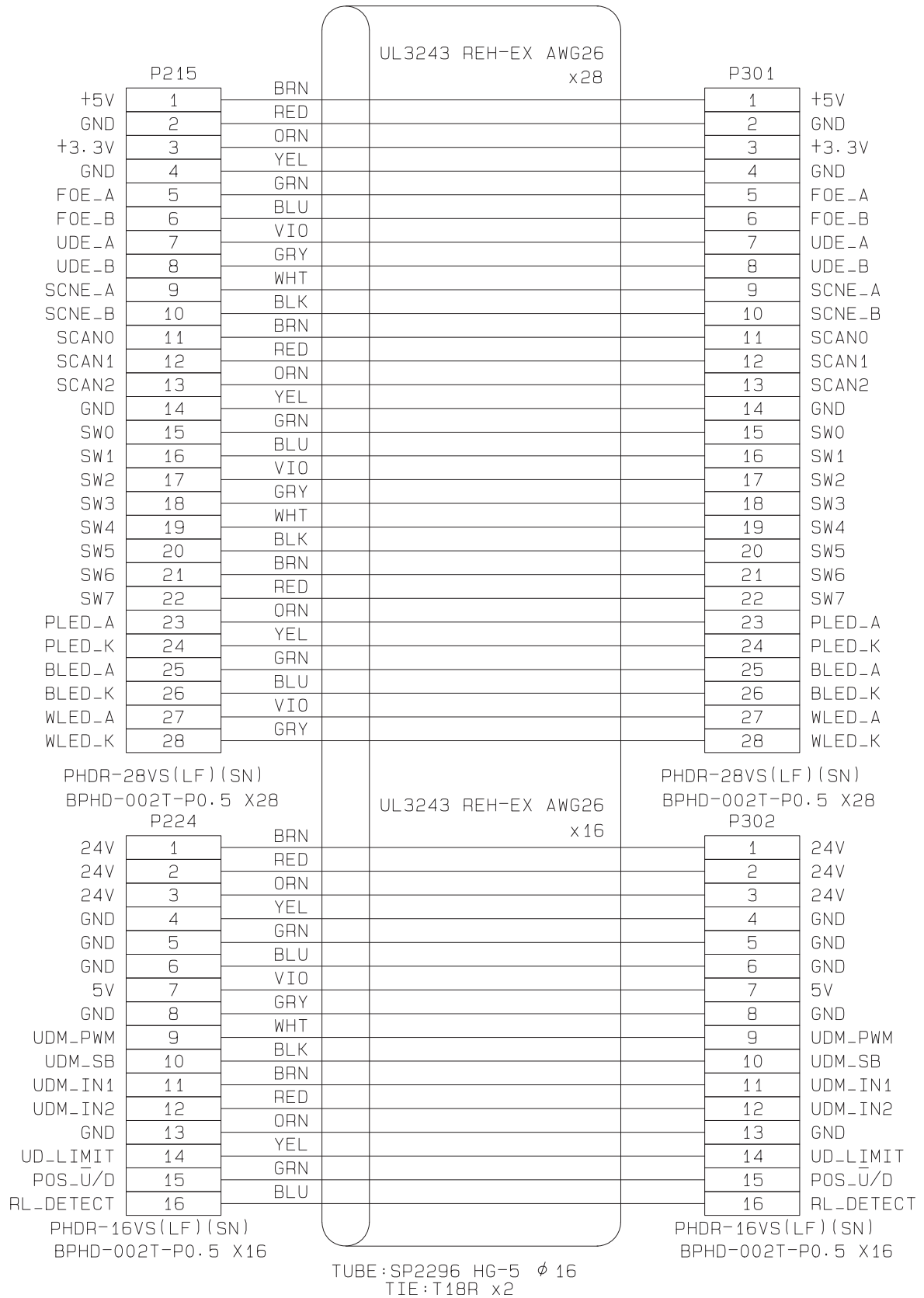
10701-EA29



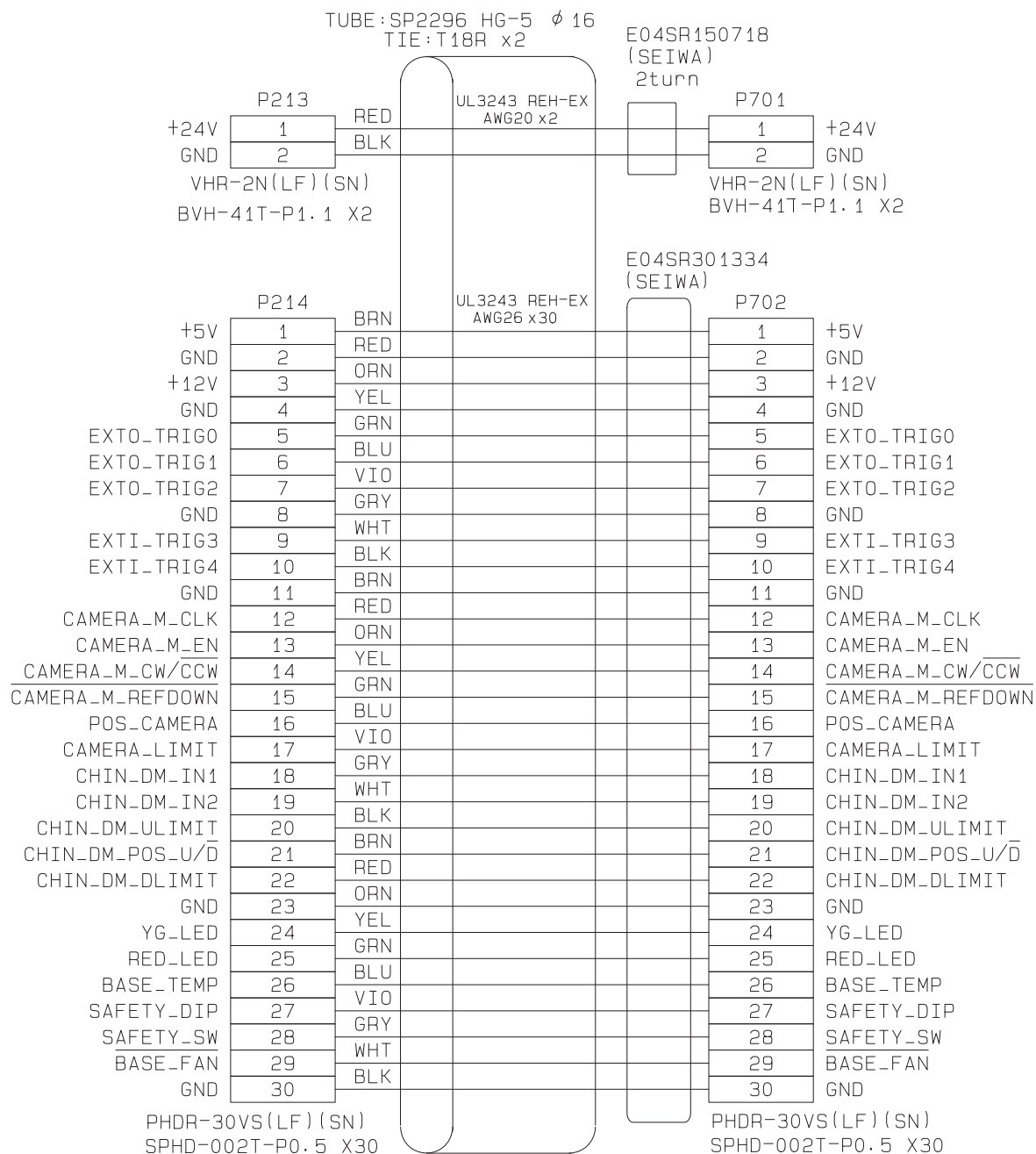
10701-EA30



10701-EA31



10701-EA32



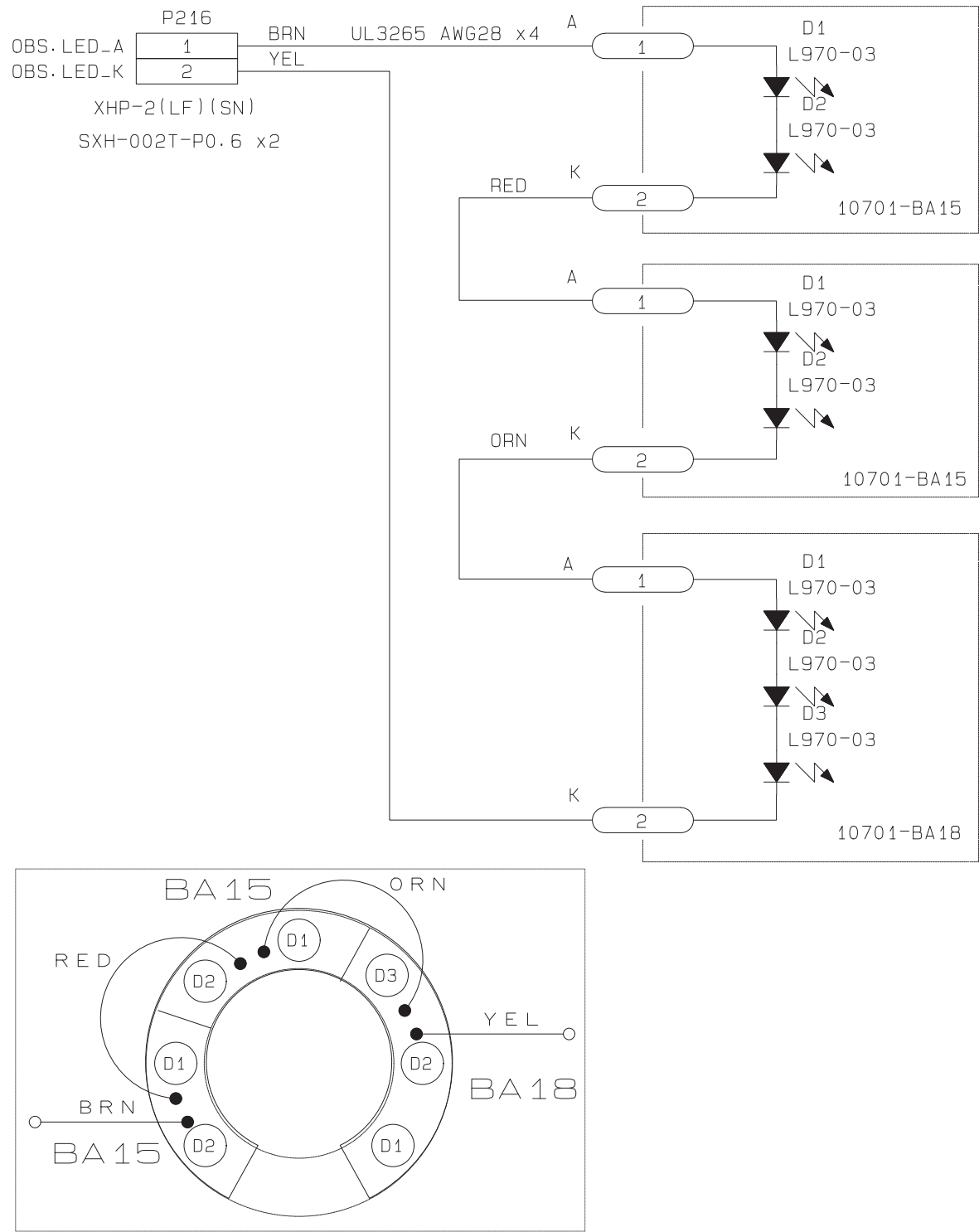
10701-EA34

P305			P401		
		BRN			
24V	1	RED	1	24V	
24V	2	ORN	2	24V	
24V	3	YEL	3	24V	
GND	4	GRN	4	GND	
GND	5	BLU	5	GND	
GND	6	VIO	6	GND	
5V	7	GRY	7	5V	
GND	8	WHT	8	GND	
UDM_PWM	9	BLK	9	UDM_PWM	
UDM_SB	10	BRN	10	UDM_SB	
UDM_IN1	11	RED	11	UDM_IN1	
UDM_IN2	12	ORN	12	UDM_IN2	
GND	13	YEL	13	GND	
UD_LIMIT	14	GRN	14	UD_LIMIT	
POS_U/D	15	BLU	15	POS_U/D	
RL_DETECT	16		16	RL_DETECT	
PHDR-16VS(LF)(SN)			PHDR-16VS(LF)(SN)		
SPHD-002T-P0.5 X16			SPHD-002T-P0.5 X16		

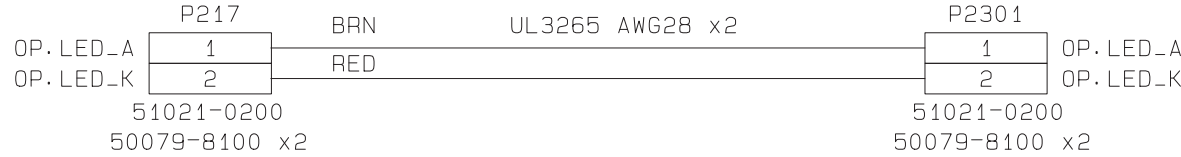
10701-EA35

P704			P902		
		BRN			
EXT_TRIG0+	1	RED	1	EXT_TRIG0+	
EXT_TRIG0-	2	ORN	2	EXT_TRIG0-	
EXT_TRIG1+	3	YEL	3	EXT_TRIG1+	
EXT_TRIG1-	4	GRN	4	EXT_TRIG1-	
GND	5	BLU	5	GND	
GND	6	VIO	6	GND	
EXT_TRIG2+	7	GRY	7	EXT_TRIG2+	
EXT_TRIG2-	8	WHT	8	EXT_TRIG2-	
EXT_TRIG3+	9	BLK	9	EXT_TRIG3+	
EXT_TRIG3-	10	BRN	10	EXT_TRIG3-	
EXT_TRIG4+	11	RED	11	EXT_TRIG4+	
EXT_TRIG4-	12		12	EXT_TRIG4-	
PHDR-12VS(LF)(SN)			PHDR-12VS(LF)(SN)		
SPHD-002T-P0.5 X12			SPHD-002T-P0.5 X12		

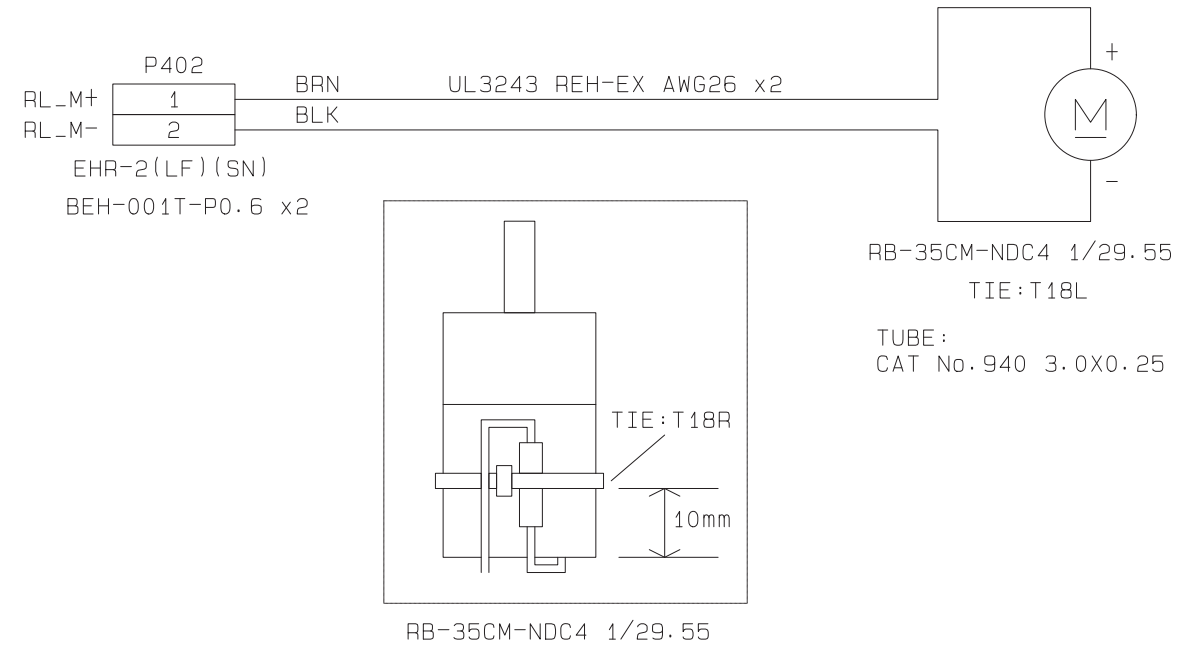
10701-EA38



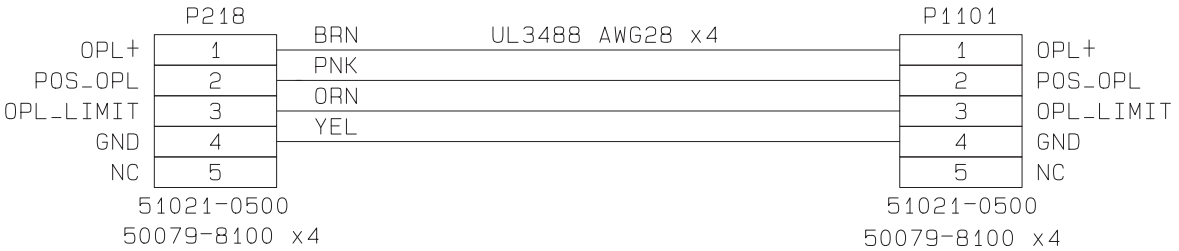
10701-EA39



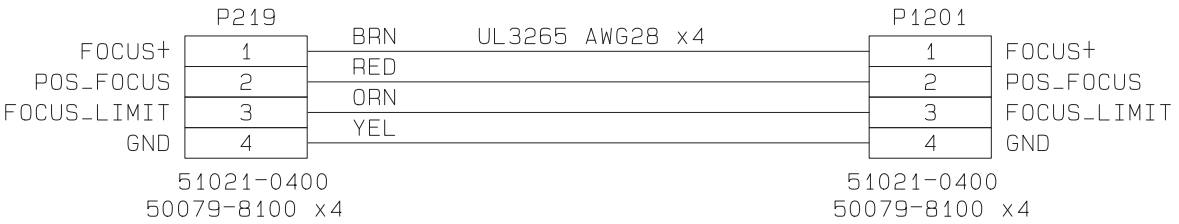
10701-EA42



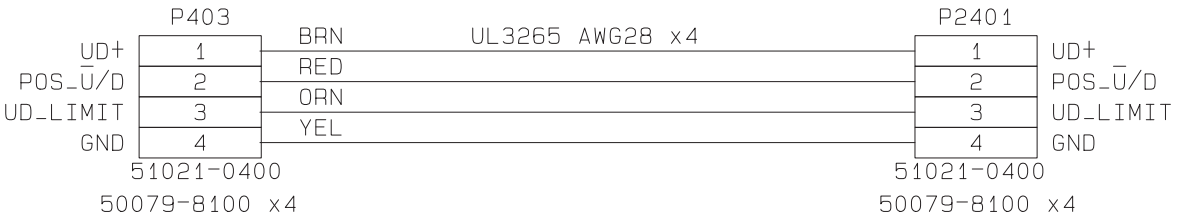
10701-EA45



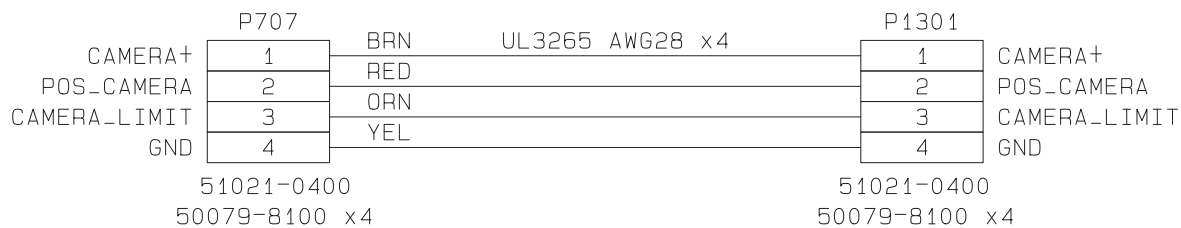
10701-EA46



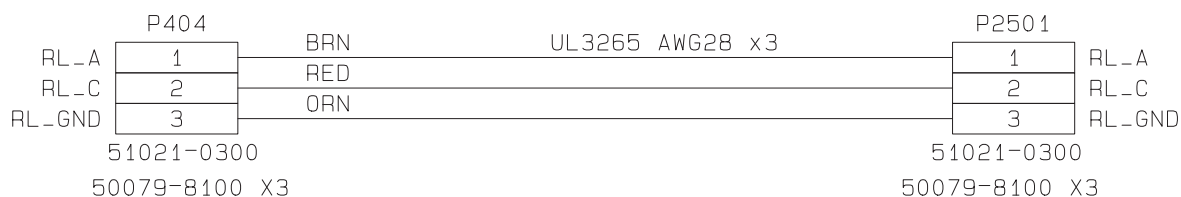
10701-EA47



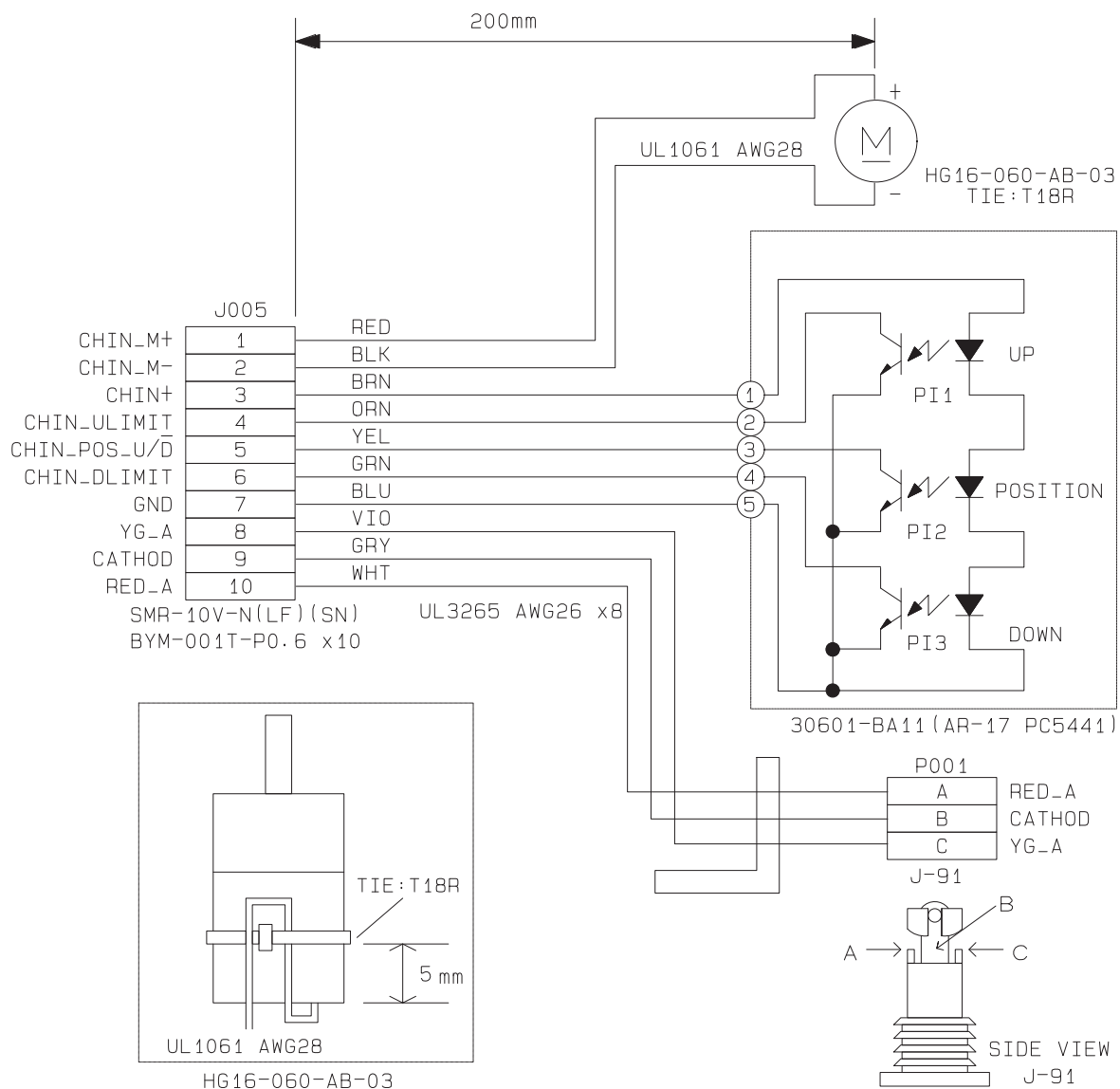
10701-EA48



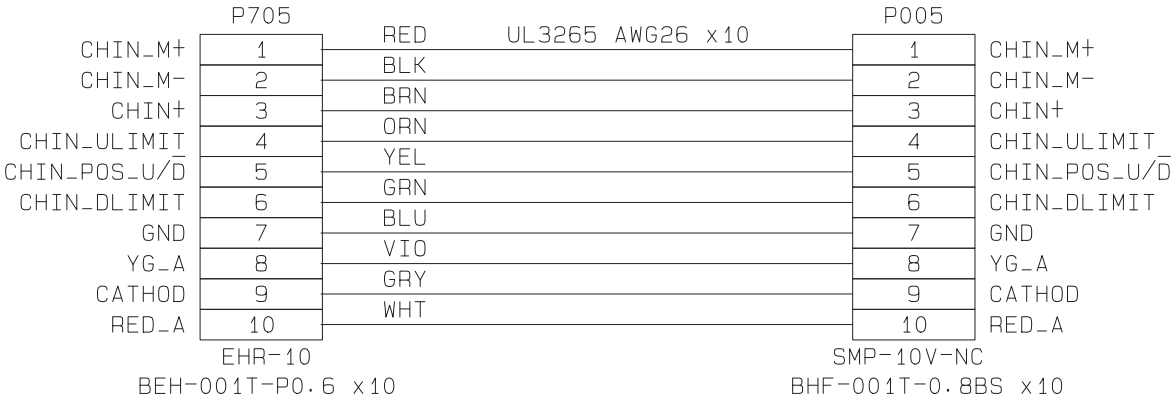
10701-EA49



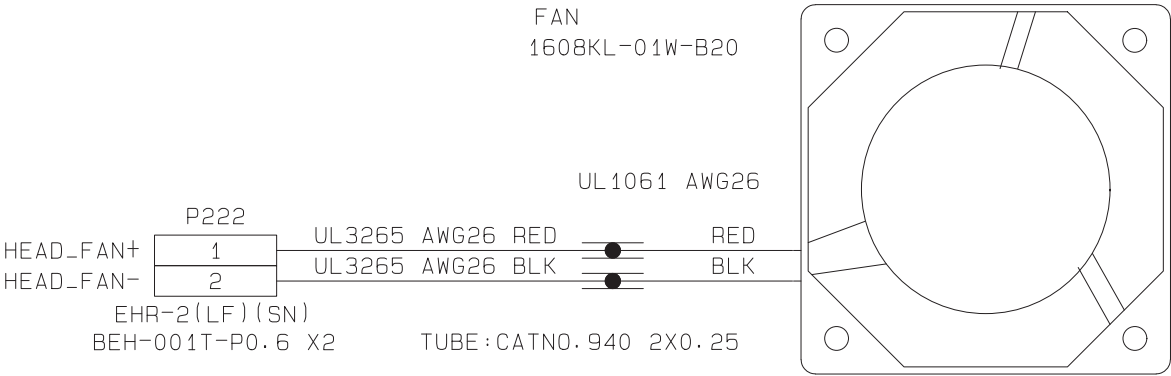
10701-EA53



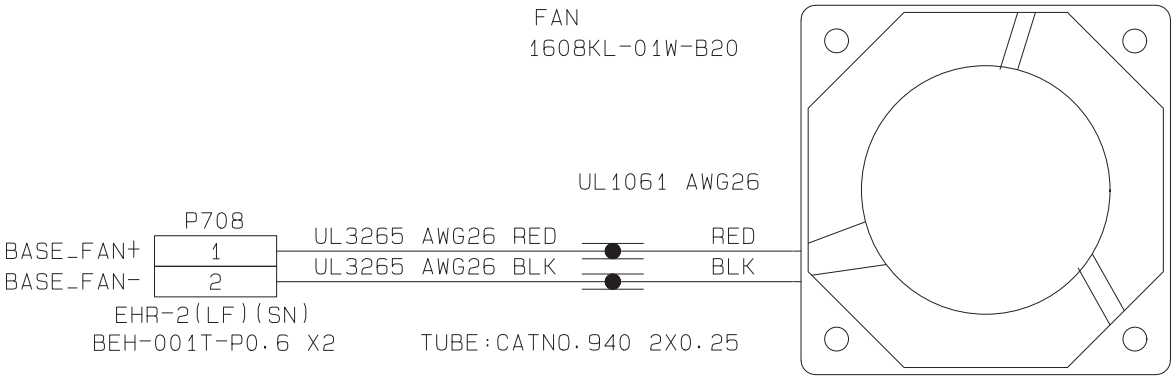
10701-EA54



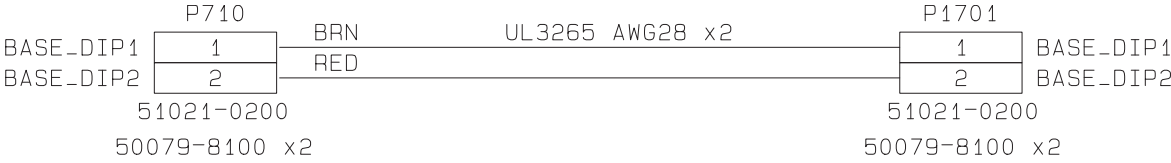
10701-EA55



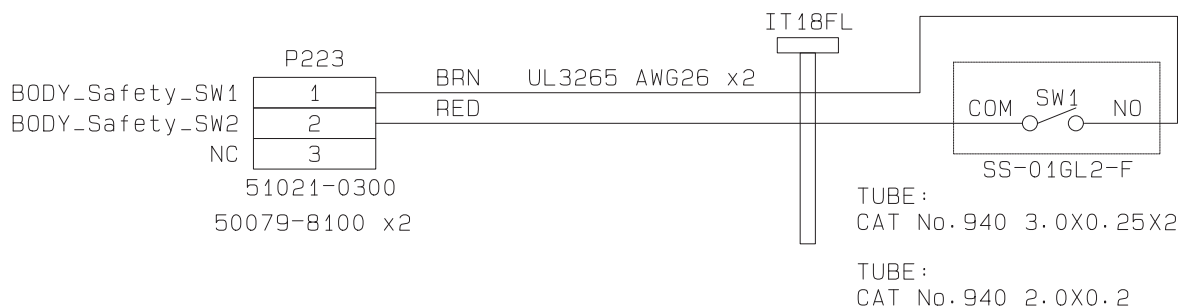
10701-EA56



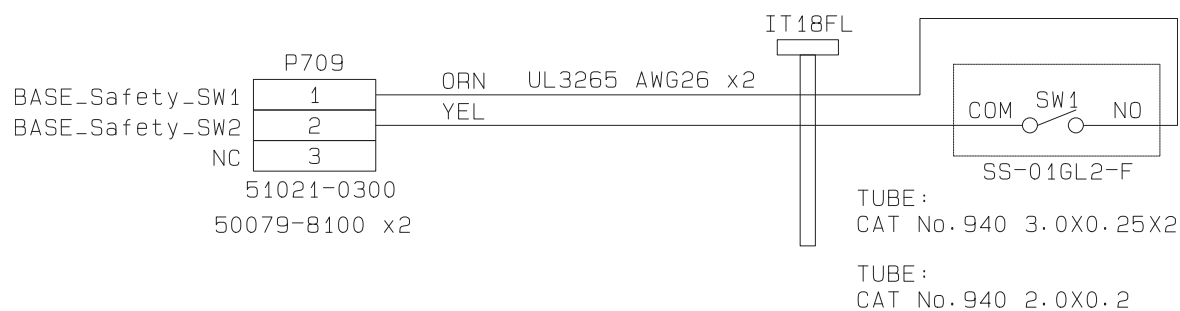
10701-EA57



10701-EA58



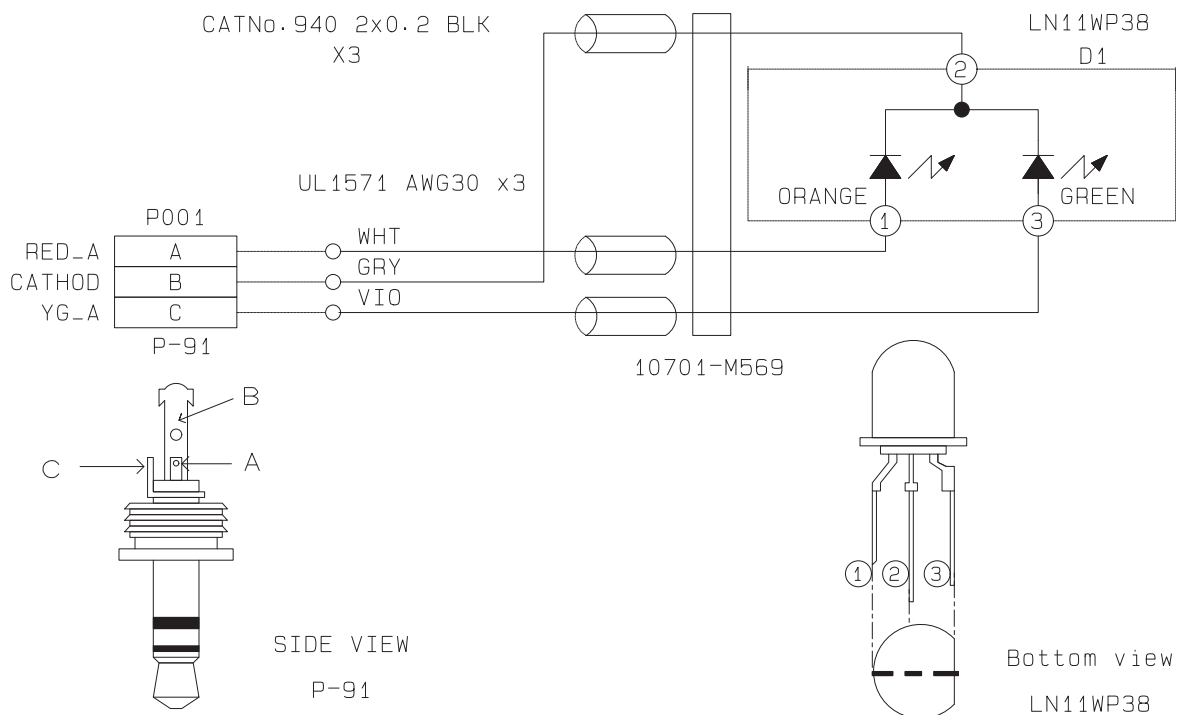
10701-EA59



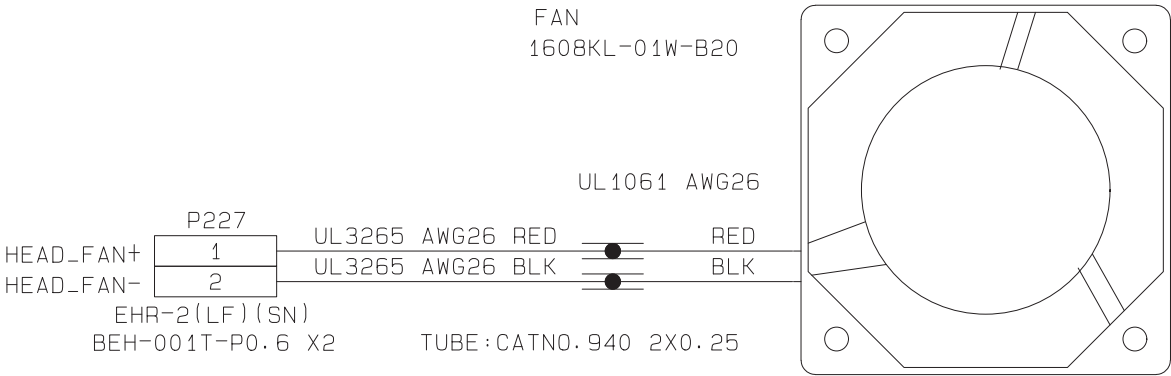
10701-EA61



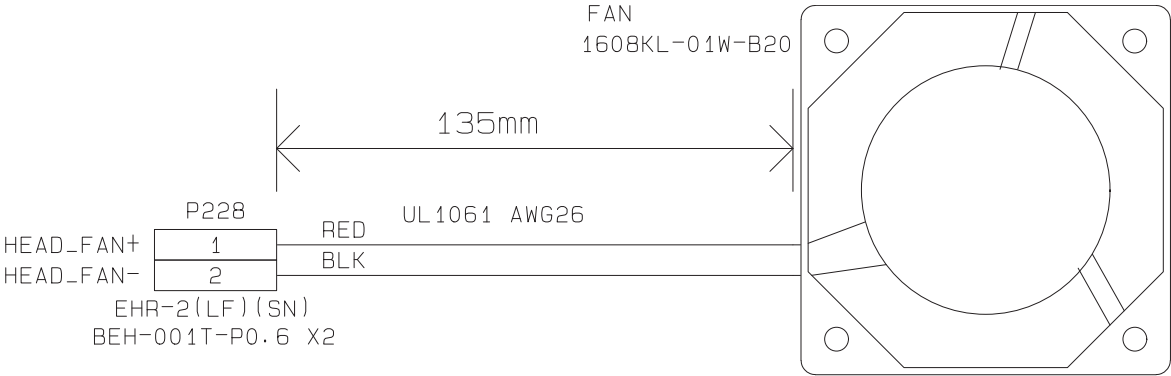
10701-EA63



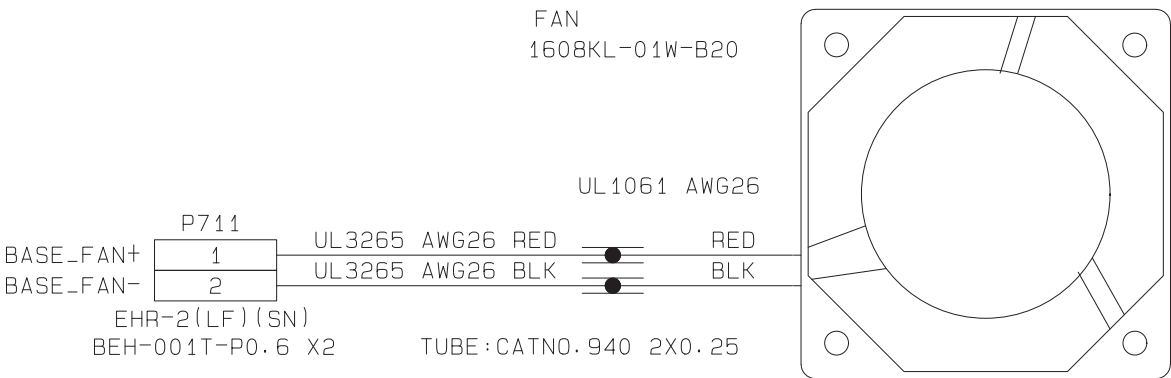
10701-EA65



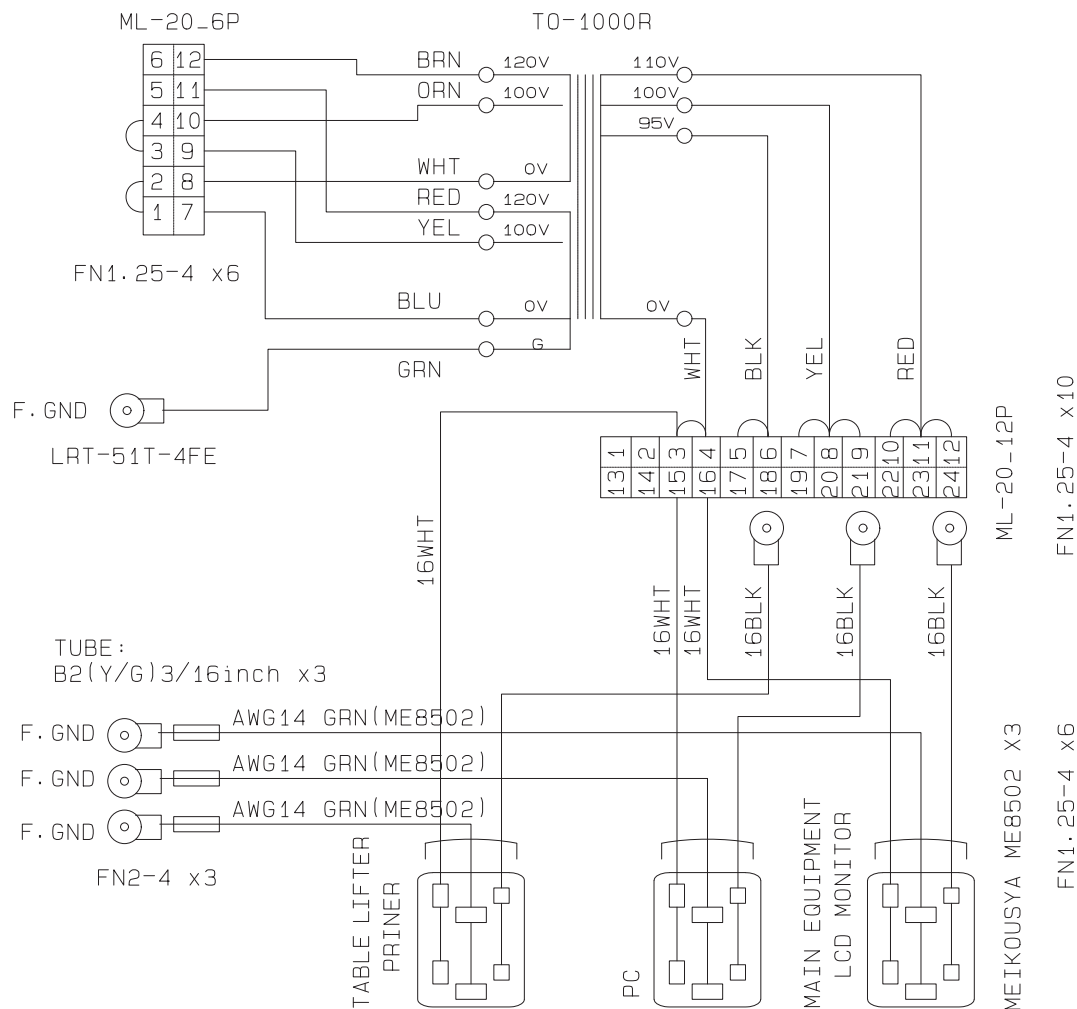
10701-EA66



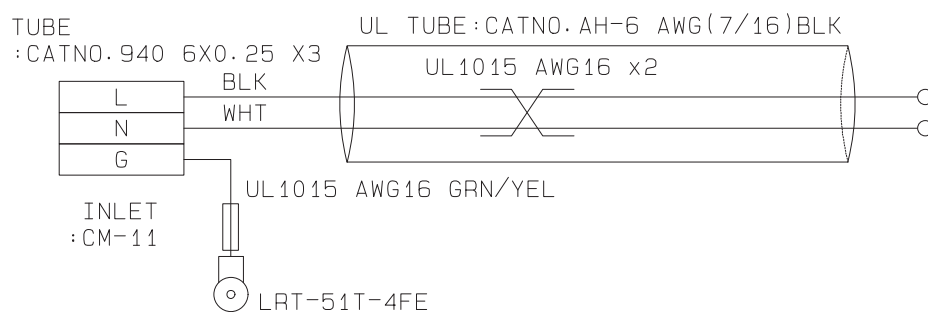
10701-EA67



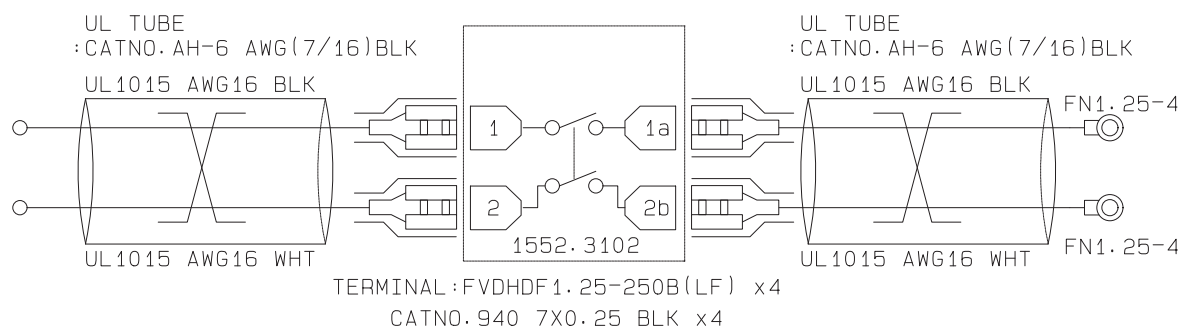
10701-EA68



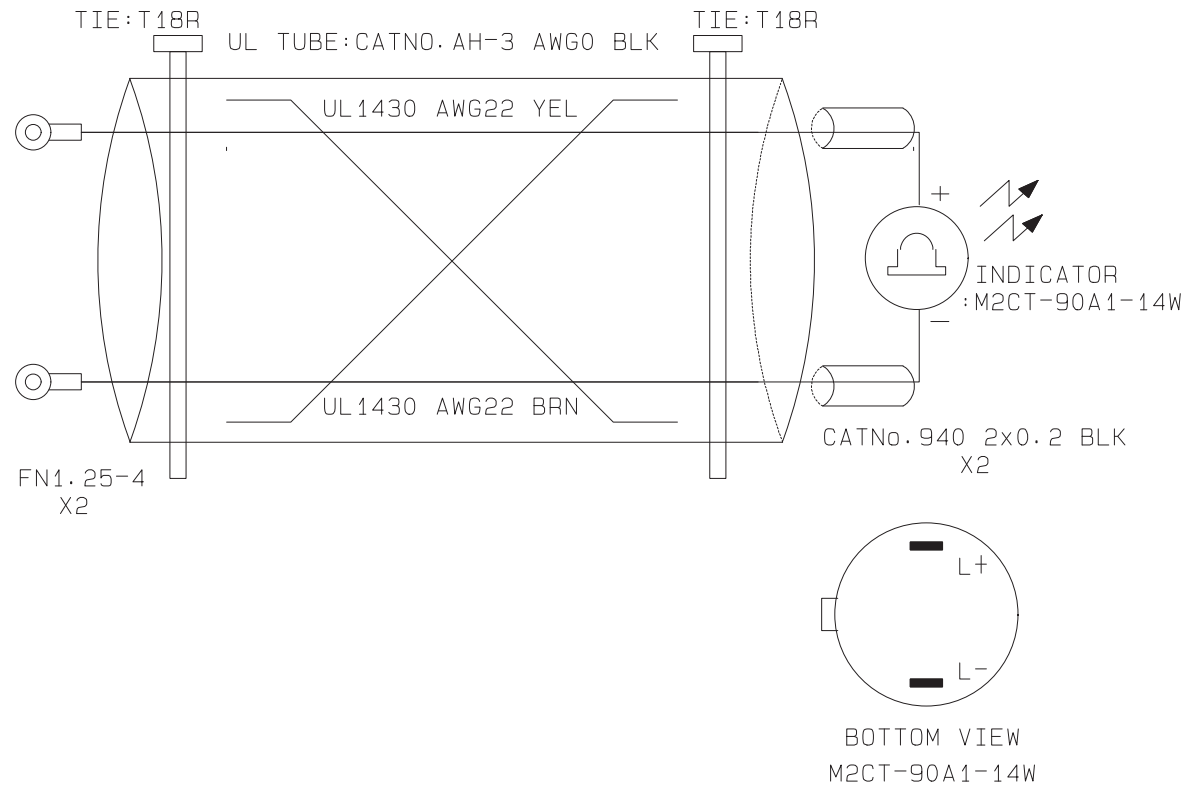
10701-EA69



10701-EA70

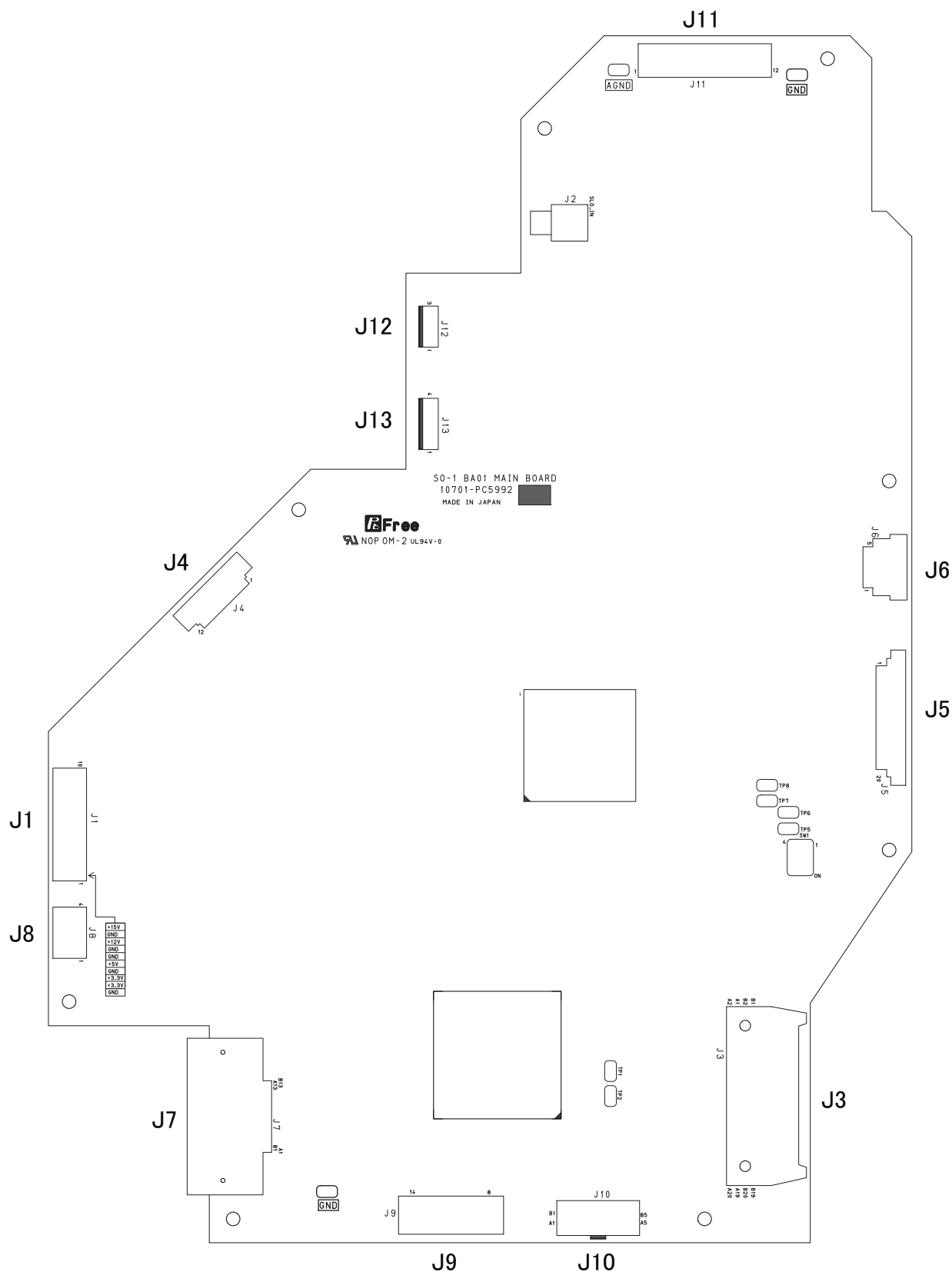


10701-EA71

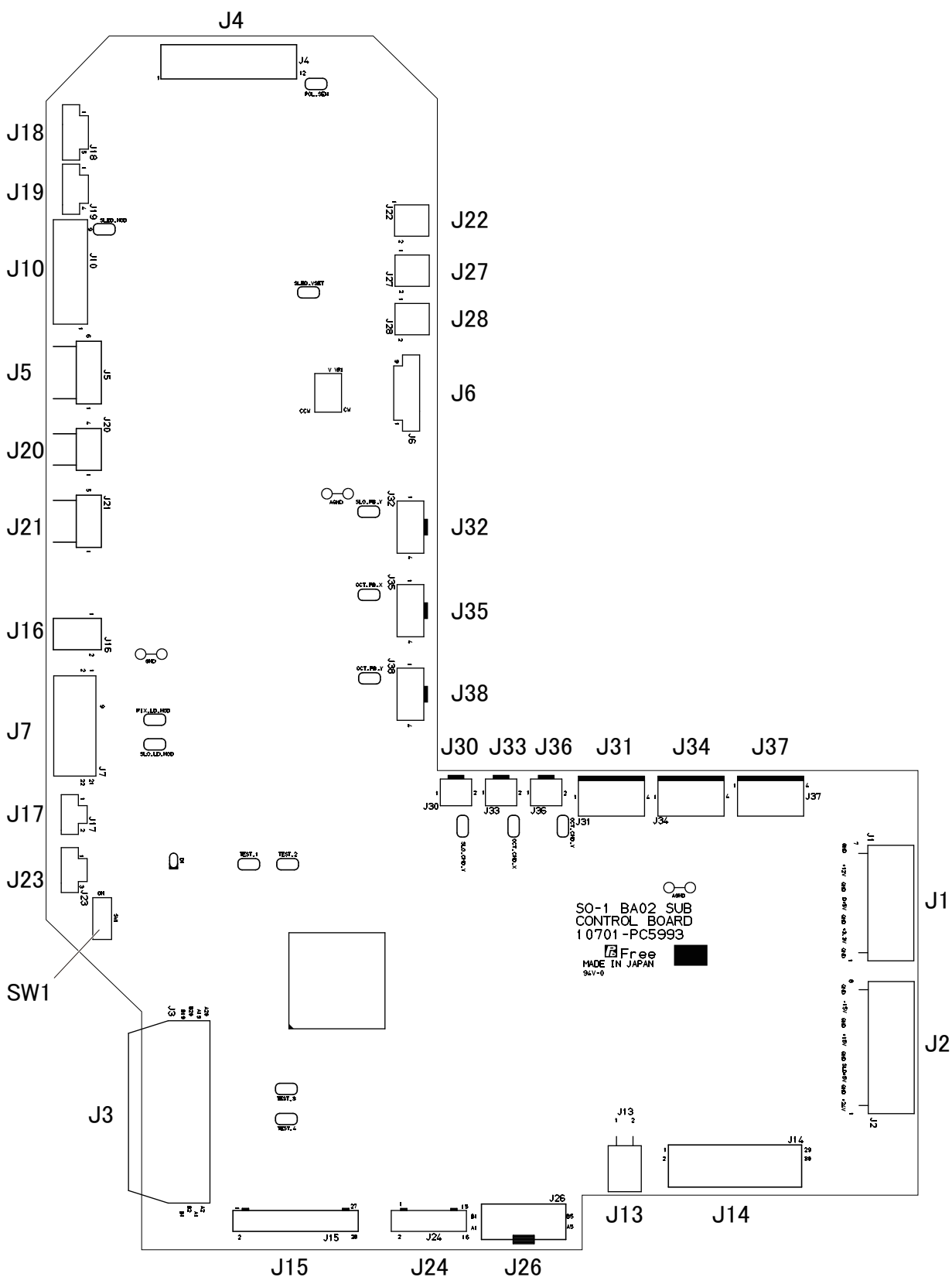


9.5 Switch Positions on Boards

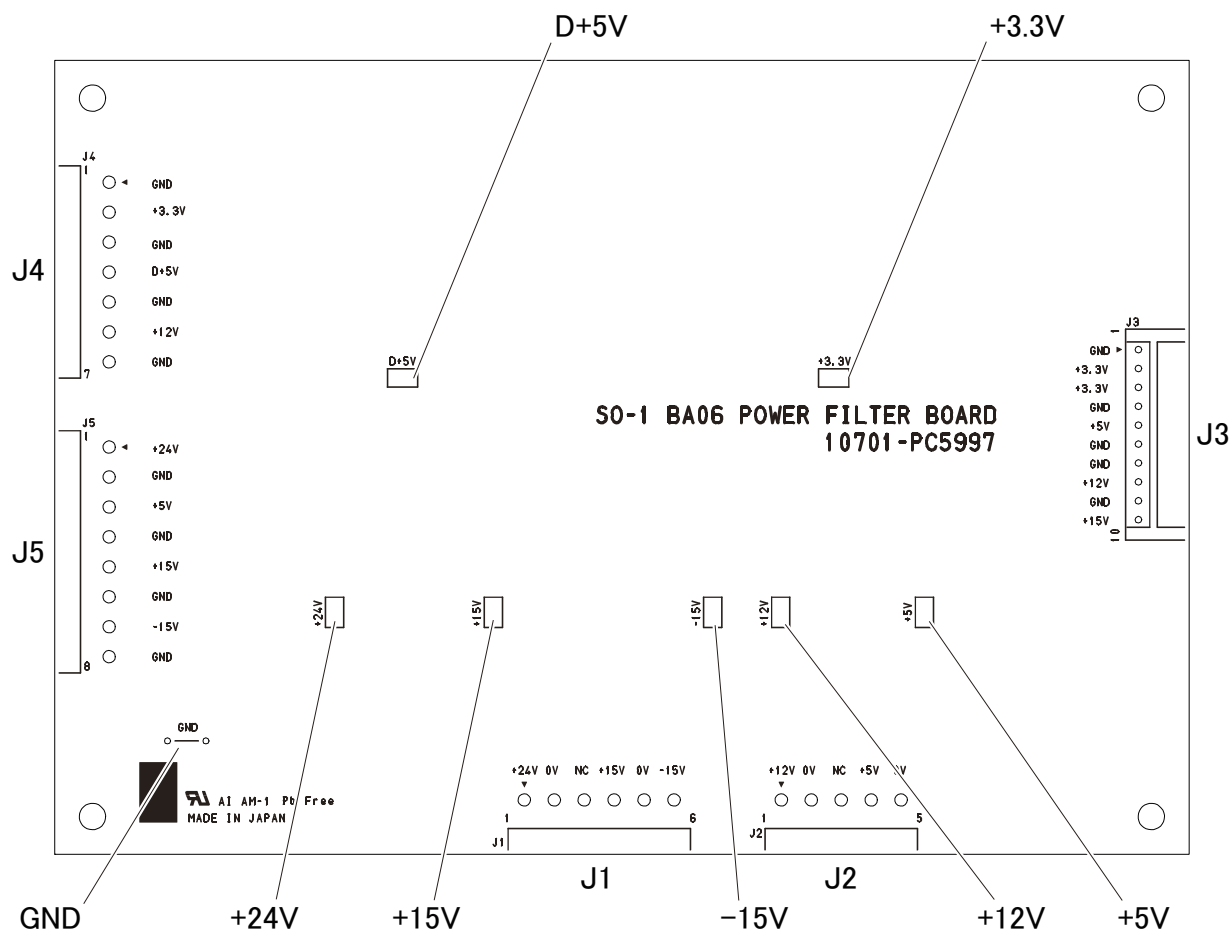
10701-BA01



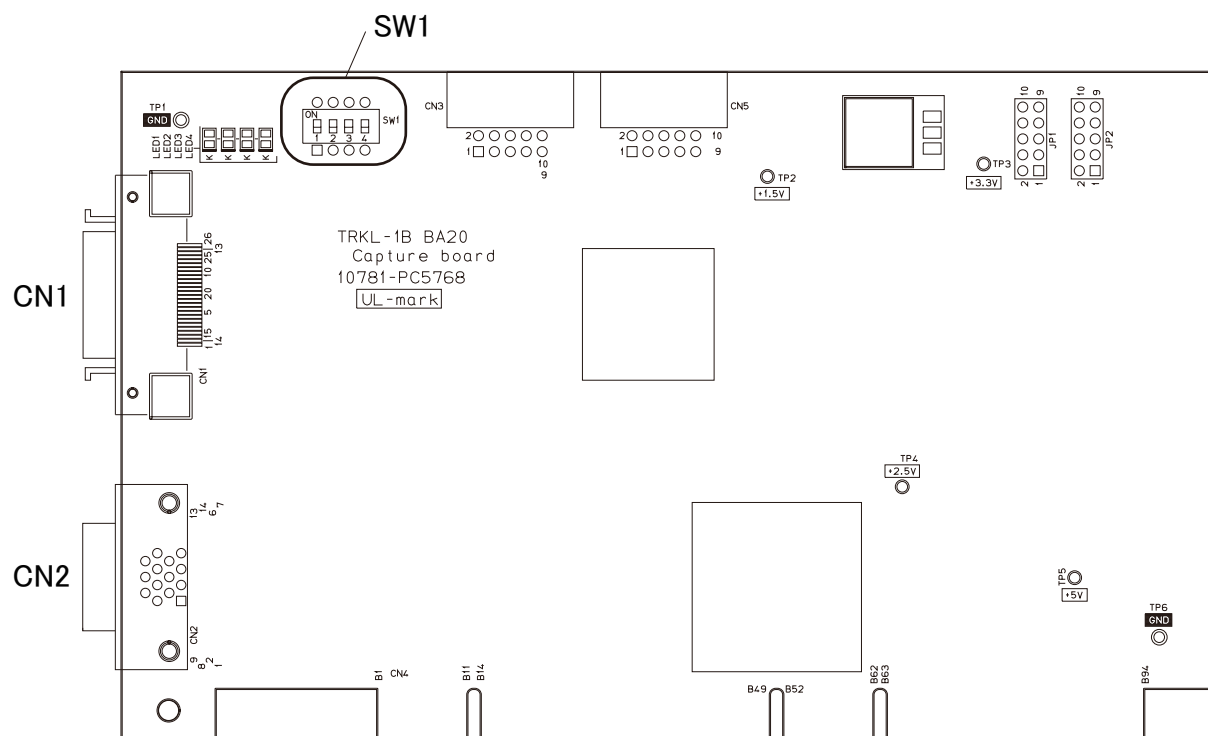
10701-BA02



10701-BA06



10701-BA20



9.6 Parameter List

SETUP PARAMETER

	English
01	MACHINE SETTING
02	STARTUP SETTING
03	VERSION INFO




MACHINE SETTING

Setting item		Alternative	Factory setting	Remarks
01	BEEP	HIGH		-
		LOW	-	-
		OFF	-	-
02	SLEEP	NONE	-	-
		After 5 min		-
		After 10 min	-	-
		After 15 min	-	-
03	LCD BACKLIGHT	HIGH		-
		MID	-	-
		LOW	-	-
04	HAND LIGHT	HIGH		-
		LOW	-	-
		OFF	-	-
05	RL DISP	R/L		-
		OD/OS	-	-
06	SCAN WIDTH DISP	mm		-
		°	-	-
07	HEAD/CHINREST INIT	ON		-
		OFF	-	-





STARTUP SETTING

01	BASIC SETTING
02	MACULA LINE
03	MACULA CROSS
04	MACULA MAP
05	MACULA MULTI
06	DISC CIRCLE
07	DISC MAP
08	CONTRAST/BRIGHTNESS





BASIC SETTING

Setting item		Alternative	Factory setting	Remarks
01	STARTUP OCT SETTING	MACULA LINE		-
		MACULA CROSS	-	-
		MACULA MAP	-	-
		MACULA MULTI	-	-
		DISC CIRCLE	-	-
		DISC MAP	-	-
02	STARTUP SLO SETTING	WIDE		40° × 30°
		ZOOM	-	20° × 15°
03	STARTUP FIX MODE	NORMAL		Cross (small)
		LARGE	-	Cross (large)
		EXTERNAL RED	-	-
		EXTERNAL GREEN	-	-



MACULA LINE

Setting item		Alternative	Factory setting	Remarks
01	(WIDE) LINE WIDTH	3 - 9 mm (10 – 30°)	-	0.3 mm (1°) increments
		6 mm (20°)		-
02	(ZOOM) LINE WIDTH	3 - 4.5 mm (10 – 15°)	-	0.3 mm (1°) increments
		4.5 mm (15°)		-
03	A-SCAN POINT	1024		-
		512	-	-
04	HD ACQUISITION NUMBER	1 or 5 - 20	-	-
		10		-








MACULA CROSS

Setting item		Alternative	Factory setting	Remarks
01	(WIDE) CROSS WIDTH	3 - 9 mm (10 – 30°)	-	0.3 mm (1°) increments
		6 mm (20°)		-
02	(ZOOM) CROSS WIDTH	3 - 4.5 mm (10 – 15°)	-	0.3 mm (1°) increments
		4.5 mm (15°)		-
03	A-SCAN POINT	1024		-
		512	-	-
04	HD ACQUISITION NUMBER	1 or 5 - 20	-	-
		10		-





MACULA MAP

Setting item		Alternative	Factory setting	Remarks
01	(WIDE) MAP X WIDTH	3 - 9 mm (10 – 30°)	-	0.3 mm (1°) increments
		6 mm (20°)		-
02	(WIDE) MAP Y WIDTH	3 - 9 mm (10 – 30°)	-	0.3 mm (1°) increments
		6 mm (20°)		-
03	(ZOOM) MAP X WIDTH	3 - 4.5 mm (10 – 15°)	-	0.3 mm (1°) increments
		4.5 mm (15°)		-
04	(ZOOM) MAP Y WIDTH	3 - 4.5 mm (10 – 15°)	-	0.3 mm (1°) increments
		4.5 mm (15°)		-
05	SCAN TYPE	X → Y		-
		Y → X	-	-
06	A-SCAN POINT	1024	-	-
		512	-	-
		256		-
07	NUMBER OF B-SCAN	256		-
		128	-	-
		64	-	-








MACULA MULTI

Setting item		Alternative	Factory setting	Remarks
01	(WIDE) MULTI LINE WIDTH	3 - 9 mm (10 – 30°)	-	0.3 mm (1°) increments
		6 mm (20°)		-
02	(WIDE) MULTI LINE PITCH	0.075 - 1.5 mm (0.25 – 5°)	-	0.075 mm (0.25°) increments
		0.3 mm (1°)		-
03	(ZOOM) MULTI LINE WIDTH	3 - 4.5 mm (10 – 15°)	-	0.3 mm (1°) increments
		4.5 mm (15°)		-
04	(ZOOM) MULTI LINE PITCH	0.075 - 0.75 mm (0.25 – 2.5°)	-	0.075 mm (0.25°) increments
		0.3 mm (1°)		-
05	SCAN TYPE	CROSS		-
		HORIZONTAL	-	-
		VERTICAL	-	-
06	A-SCAN POINT	1024		-
		512	-	-
07	HD ACQUISITION NUMBER	1 or 5 - 10	-	-
		5		-



DISC CIRCLE

Setting item		Alternative	Factory setting	Remarks
01	(WIDE) CIRCLE DIAMETER	3 - 9 mm (10 – 30°)	-	0.3 mm (1°) increments
		3.3 mm (11°)		-
02	(ZOOM) CIRCLE DIAMETER	3 - 4.5 mm (10 – 15°)	-	0.3 mm (1°) increments
		3.3 mm (11°)		-
03	A-SCAN POINT	1024		-
04	HD ACQUISITION NUMBER	1 or 5 - 20	-	-
		10		-

DISC MAP

Setting item		Alternative	Factory setting	Remarks
01	(WIDE) MAP X WIDTH	3 - 9 mm (10 – 30°)	-	0.3 mm (1°) increments
		6 mm (20°)		-
02	(WIDE) MAP Y WIDTH	3 - 9 mm (10 – 30°)	-	0.3 mm (1°) increments
		6 mm (20°)		-
03	(ZOOM) MAP X WIDTH	3 - 4.5 mm (10 – 15°)	-	0.3 mm (1°) increments
		4.5 mm (15°)		-
04	(ZOOM) MAP Y WIDTH	3 - 4.5 mm (10 – 15°)	-	0.3 mm (1°) increments
		4.5 mm (15°)		-
05	SCAN TYPE	X → Y		-
		Y → X	-	-
06	A-SCAN POINT	1024	-	-
		512	-	-
		256		-
07	NUMBER OF B-SCAN	256		-
		128	-	-
		64	-	-

CONTRAST/BRIGHTNESS

Setting item		Alternative	Factory setting	Remarks
01	CONTRAST	1 - 100	-	-
		50		-
02	BRIGHTNESS	1 - 100	-	-
		50		-

9.7 Error Code List

9.7.1 Main body

Error code	Contents	Main cause
001	EEPROM data	EEPROM failure
		EEPROM data corruption
002	Connection with PC software	Disconnection of the OCT camera link cable
		Failure or break of the OCT camera link cable
		Disconnection of the trigger cable
		Failure or break of the trigger cable
003	Optical axis adjustment	Line CCD motor failure
		Misalignment of the CCD unit due to drop vibration
		SLD module failure
		Misalignment of the SLD module due to drop vibration
004	Body cover open	Improper cover attachment or DIP SW misoperation
		Microswitch failure, harness break
005	Body cover DIP switch	Improper cover attachment or DIP SW misoperation
		DIP SW failure, harness break
006	Base cover	Improper cover attachment or DIP SW misoperation
		Microswitch failure
007	Base DIP switch	Improper cover attachment or DIP SW misoperation
		DIP SW failure
008	LCD Backlight	LCD backlight failure
		LCD inverter board failure
011	Spectrometer motor overrun	Improper attachment of the line CCD motor unit
		Line CCD motor limit sensor failure, harness break
012	Spectrometer motor stop	Line CCD motor failure, harness break
		Line CCD motor driver failure
013	OPL motor overrun	Improper attachment of the OPL motor unit
		OPL motor limit sensor failure, harness break
014	OPL motor stop	OPL motor failure, harness break
		OPL motor driver failure
015	Focus motor overrun	Improper attachment of the focus motor unit
		Focus motor limit sensor failure
016	Focus motor stop	Focus motor failure, harness break
		Focus motor driver failure
017	Chin-rest motor	Chinrest motor failure, harness break
		Chinrest motor driver failure
018	Up/Down motor	Up/Down motor failure, harness break
		Up/Down motor driver failure

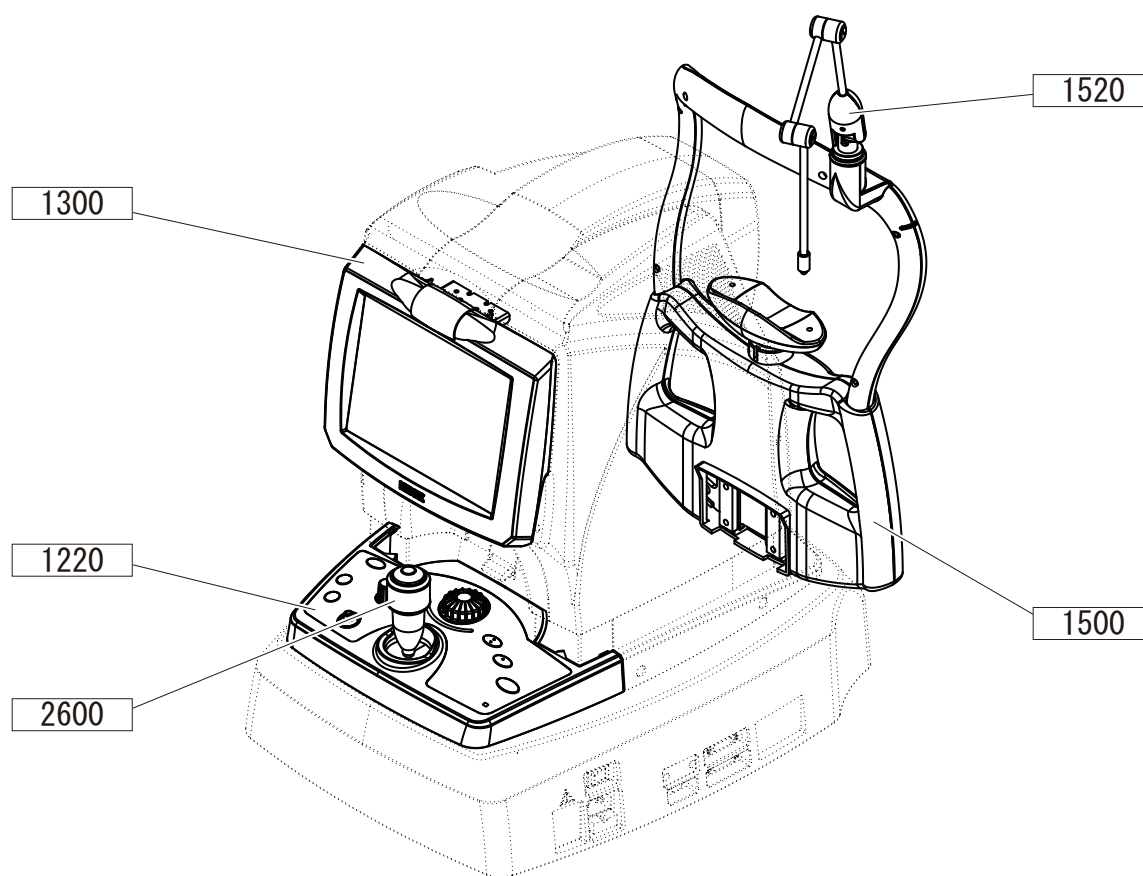
021	OCT X galvano driver	OCT X galvano driver failure
		OCT X galvano failure
022	OCT Y galvano driver	OCT X or Y galvano driver failure
		OCT X or Y galvano failure
023	OCT galvano mirror	OCT X or Y galvano driver failure
		OCT X or Y galvano failure
024	OCT SLD	SLD module failure
025	OCT shutter	OCT shutter failure
026	SLD initialization	SLD module failure
027	SLD power over	SLD module failure
028	Timing of SLD and LD	SLD module failure
		Improper setting of the line CCD
029	OCT galvano synchronization	Disconnection of the trigger cable
		Failure or break of the trigger cable
		Freeze of the PC (software for image capture)
031	SLO galvano driver	SLO galvano driver failure
		SLO galvano failure
032	SLO galvano mirror	SLO galvano driver failure
		SLO galvano failure
033	SLO polygon mirror	Polygon driver failure
		Polygon motor failure
034	SLO polygon sensor	Polygon sensor phototransmitter failure, harness break
		Polygon sensor photoreceptor failure, harness break
035	SLO LD	LD driver failure
		LD failure
036	FIX LD	LD driver failure
		LD failure
037	SLO shutter	SLO shutter failure

9.7.2 PC

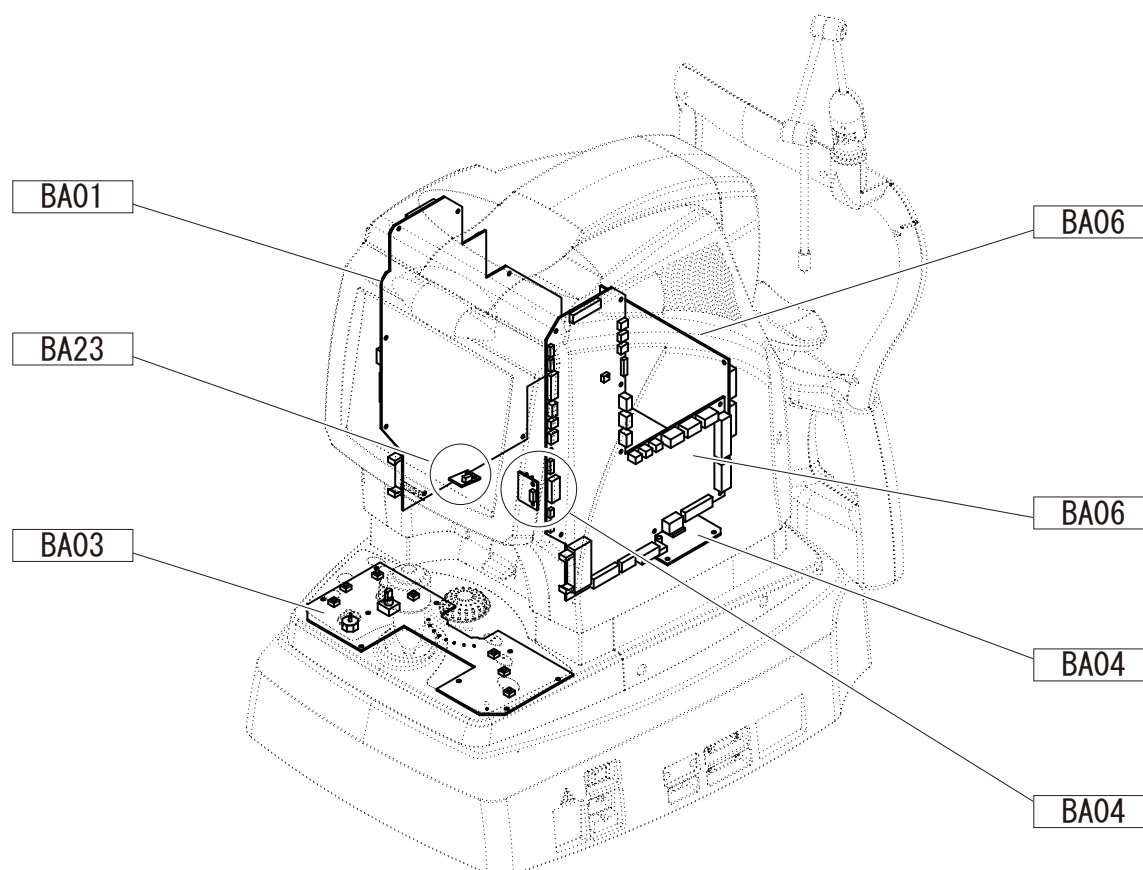
Error code	Contents	Main cause
1001	Connection with DB software	The system information received from the data base software is not correct.
		RS-3000 Capture is not compatible with the version of the data base software.
1002	SLO capture board	SLO capture board is not installed.
		The setting of the DIP SW on the SLO capture board is not correct.
1003	OCT capture board	OCT capture board is not installed.
		The setting of the DIP SW on the OCT capture board is not correct.
1004	Limit over capture board	Three or more capture boards are connected.
1011	System information	The system information received from the device is not correct.
		RS-3000 Capture is not compatible with the version of the device.
1012	Trigger cable (input)	Trigger cable is not connected.
1013	Trigger cable (output)	Trigger cable is not connected.
1014	Connection with CCD camera	OCT camera link cable is not connected.
		CCD camera is not turned on, or it is defective.
1015	OCT calibration file	OCT calibration file is not in the specified folder.
		The serial number contained in the name of the OCT calibration file does not match that of the connected device.

9.8 Layout Drawing

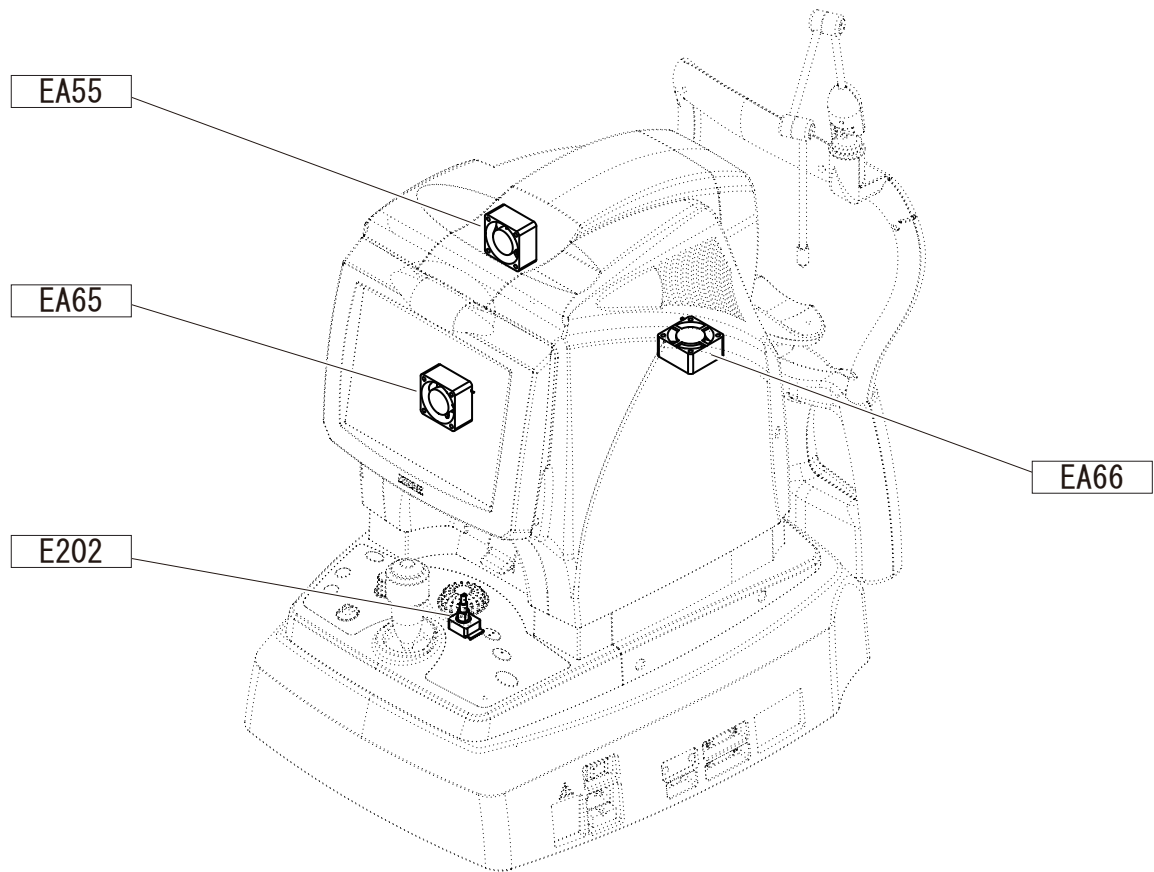
9.8.1 ASSYs



9.8.2 Boards



9.8.3 Electrical components



9.9 Jigs

Part No.	Part name
10670-M113	IR sensor card TW
35930-M991	Grease gun [High pressure lever gun]: PH-100 [TRUSCO NAKAYAMA CORP.]

9.10 Consumable

Part No.	Part name
10730-M142	Grease [Sumitec 304: SUMICO LUBRICANT CO., LTD]

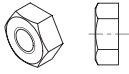
9.11 List of Replacement Parts and Required Adjustments

● : Required, - : Not required, ▲ : Check

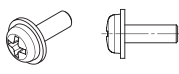
	8.4 Loading OCT Calibration File	8.3.1 Capture board (10701-BA20)	8.8.1 BIOS setting	8.8.2 Date and time setting	8.8.3 Time zone setting
7.1.1.1 Main body	●	-	-	-	
7.1.1.2 Operation panel ASSY (10701-1220)	-	-	-	-	
7.1.1.3 LCD ASSY (10701-1300)	-	-	-	-	
7.1.1.4 Chinrest ASSY (10701-1500)	-	-	-	-	
7.1.1.5 External fixation target ASSY (10701-1520)	-	-	-	-	
7.1.1.6 Lens cap ASSY (10701-2400)	-	-	-	-	
7.1.1.7 Joystick ASSY (30601-2600)	-	-	-	-	
7.1.2.1 Main board (10701-BA01)	-	-	-	-	
7.1.2.2 SW board (10701-BA03)	-	-	-	-	
7.1.2.3 UDM DRV board (10701-BA04)	-	-	-	-	
7.1.2.4 Power filter board (10701-BA06)	-	-	-	-	
7.1.2.5 Hand light board (10701-BA23)	-	-	-	-	
7.1.2.6 UD sensor board (10701-BA24)	-	-	-	-	
7.1.3 Electrical components	-	-	-	-	
7.1.4 Other parts	-	-	-	-	
7.2 Isolation Transformer			-		
7.3.1 PC ASSY	●	-	-	●	●
7.3.2 Capture board (10701-BA20)	-	●	-	-	-
7.3.3 PC monitor (10701-E013)	-	-	-	-	-
7.3.4 Keyboard	-	-	-	-	-
7.3.5 Coin-shaped lithium battery (10701-E100)	-	-	●	●	●
7.3.6 Memory module (10701-E101)	-	-	-	-	-
7.3.7 System disk (10701-E102)	●	-	-	▲	▲
7.3.8 Graphic board (10701-E103)	-	-	-	-	
7.4 Motorized Optical Table	-	-	-	-	

9.12 Screw List

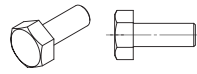
N ナット六角(1種)
HEXAGON NUT-1



BS セムスネジ(SW+PW付)
SEMS FASTENER(with SW+PW)



HB 六角ボルト
HEXAGON HEAD BOLT



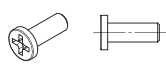
SW ワッシャスプリング
SPRING WASHER



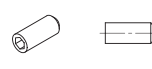
3N ナット六角(3種)
HEXAGON NUT-3



CK 小ネジ(0番1種なべ)
MACHINE SCREW(Pan head)



HH 止めネジ六角穴付
HEXAGON SOCKET SET SCREW



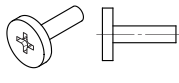
TB シンヘッドネジ
MACHINE SCREW(Thin head)



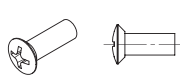
3PW ワッシャ平(3種)
WASHER-3



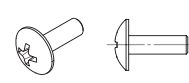
3CK 小ネジ(0番1種なべ)
MACHINE SCREW(Pan head)



OC 小ネジ丸皿
MACHINE SCREW(Oval head)



TC 小ネジトラス
MACHINE SCREW(Truss head)



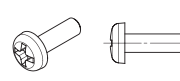
4W ワッシャ平(特殊寸法)
WASHER(Special size)



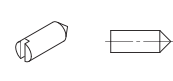
CT 止め輪C型
RETAINING RING-C TYPE



PC 小ネジなべ
MACHINE SCREW(Pan head)



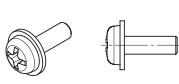
TG 止めネジすり割付
SLOTTED SET SCREW



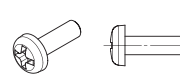
5W ワッシャ(ポリスライダ)
WASHER(Polyslider)



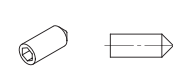
DS セムスネジ(TW付)
SEMS FASTENER(with TW)



PT タップタイトネジ(なべ)
TAPPING SCREW(Pan head)



TH 止めネジ六角穴付
HEXAGON SOCKET SET SCREW



6W ワッシャ(ナイロン)
WASHER(Nylon)



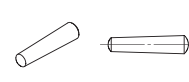
ET 止め輪E型
RETAINING RING-E TYPE



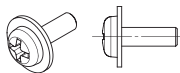
PW ワッシャ平小型丸(1種)
WASHER-1



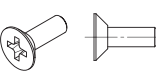
TP テーパーピン
TAPER PIN



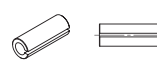
AS セムスネジ(SW+3PW付)
SEMS FASTENER(with SW+3PW)



FC 小ネジ皿
FLAT HEAD SCREW



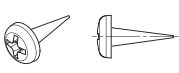
RP ピンスプリング
SPRING PIN



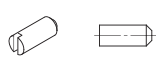
TW 歯付き座金
STAR WASHER



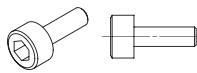
AT タッピングネジ(木ネジ用)
TAPPING SCREW(Wood screw)



FG 止めネジすり割付(平先)
SLOTTED SET SCREW(Flat point)



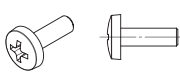
SB ボルト六角穴付
HEXAGON SOCKET HEAD CAP SCREW



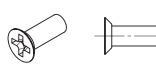
WW ワッシャ波
WAVE WASHER



BC 小ネジ(バインド)
MACHINE SCREW(Binding head)



FK 小ネジ(0番1種皿)
MACHINE SCREW(Flat head)



SP ピン平行
STRAIGHT PIN

